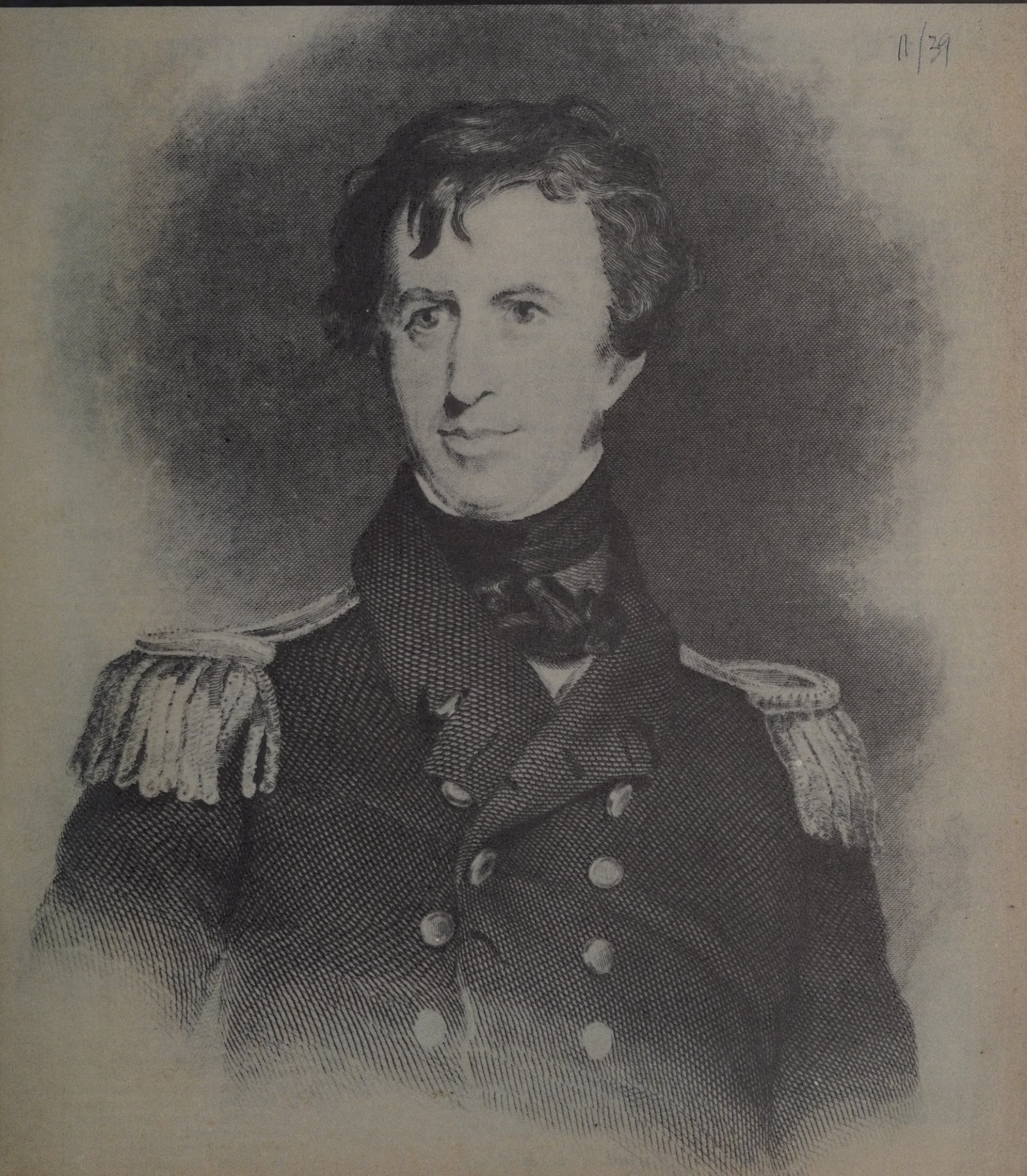
THE POLAR TIMES



The Polar Times

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No. 9. NOVEMBER. 1939.

BYRD PARTY TO SURVEY VAST ANTARCTIC DOMAIN

Government-Sponsored Expedition to Lay Bases for Possible Future Claim

By PAUL FREDERICKSEN

BOSTON, Nov. 18—The third Byrd Antarctic expedition is under way. Loaded deep and piled high with food and equipment, the blue-gray Interior Department vessel North Star left Boston last Wednesday for a 12,000-mile voyage that will take her through the Panama Canal, to New Zealand and then to the Antarctic coast. (Her first scheduled stop, to take on planes, was Philadelphia.) She will be followed from here, possibly next week, by the famous old cutter Bear, newly equipped, like her, with Diesel motor and similarly loaded. The two ships together will have 125 men aboard, including the crews.

Somewhere en route, probably at the Canal, the North Star will be boarded by the expedition's commander, Rear Admiral Richard E. Byrd, veteran of Antarctic ventures in 1928-30 and 1933-35. He sails this time under United States Government auspices, the first Antarctic explorer to do so since Lieutenant Charles Wilkes of the navy exactly a century ago.

To the two unusual purposes of an Antarctic expedition—exploration and scientific investigation—is added this time a third, which accounts for the government's participation. That is the strengthening of any future claims of the United States on Antarctic territory.

Hughes Principle Kept

Though other countries, notably units of the British Empire and Argentina, have claimed large segments of Antarctica, the United States still holds to the policy enunciated by Charles Evans Hughes as Secretary of State fifteen years ago: that claims to land unsettled by people are weak. Permanent settlement on the South polar continent has hitherto proved unfeasible; yet Washington is now considering at least semi-permanent settlement at bases to be established by Admiral Byrd.

Mr. Byrd has reported coal and other minerals under the ice and snow down there. He believes these may some day be highly valuable. He also believes that in the distant future it may be possible to establish an air route from South America to Australia, with a midway landing field in Antarctica that would obviate the need of long over-water hops. Various government departments are intrigued by the white continent's possibilities.

Congress has put up $350,000 to finance the Byrd expedition, which has the official name United States Antarctic Service. In addition Admiral Byrd has raised thousands of dollars of supplementary funds from private sources.

Unexplored Coast

When his men quit their ice bases early in 1941—perhaps to be replaced by others in the semi-permanent settlement plan—he hopes that much now unknown about Antarctica will be known. He will center his attention on an area between where Australia and South America, if extended, would cross Antarctic Circle. There a coast line 1,500 miles long, whose ice pack and drifting bergs have defied ships to reach it, remains to be discovered and mapped for the first time; and behind it are secrets that have been only partly disclosed. No men have ever camped in the area more than briefly.

The region, known as the world's greatest icemaker, stretches eastward from 150 to 80 degrees west longitude. On both sides of it lie British claims. The American expedition may conduct some of its operations across the claimed British lines, but its main tasks lie between.

President Roosevelt himself will keep an interested eye on the expedition. Reports will be furnished him by a co-ordinating committee representing the Department of the Interior (which controls the government funds for the men on the ice), the State Department, the Navy Department and the Treasury Department's Coast Guard. If any land is to be claimed, the decision will be made by the State Department with the President's approval.

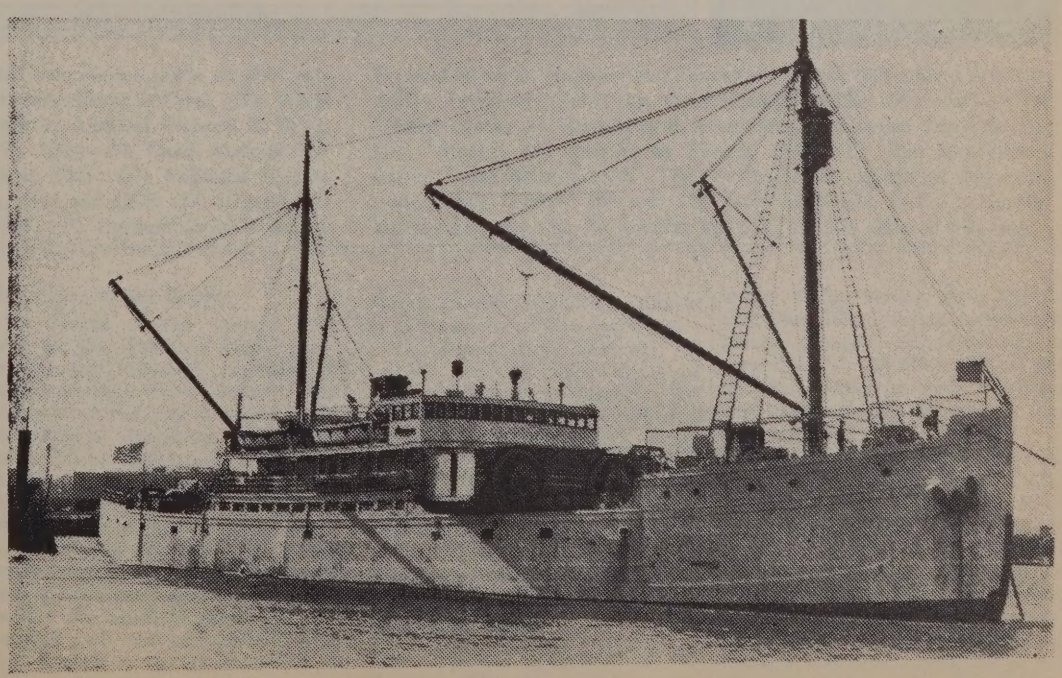
The expedition, after it reaches New Zealand, will proceed to the vicinity of Little America, at the Bay of Whales side of the Ross Sea. There a complete village, set up by Admiral Byrd on his two previous visits, sprawls on the Great Ice Barrier, deserted, snow-covered, but usable and welcoming—unless in the meanwhile that portion of the Barrier has drifted away.

But Little America lies at about 164 degrees west longitude. Because it is, therefore, about 181 miles within the British claim and the same distance from the area of most interest to the United States, it may be decided not to make over this base, but to set up the western base of the expedition farther to the eastward. This may be done by landing at the Bay of Whales and hauling equipment across the ice or by seeking a landing place somewhat farther east and then trekking inland. In the latter case, the Americans would be following a precedent set by a little-known Japanese expedition in 1911-12.

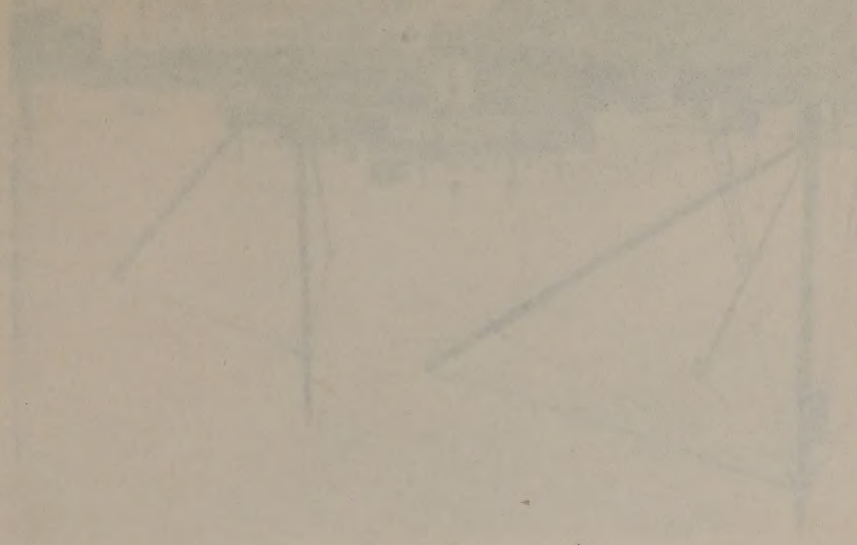
Second Camp Planned

After unloading men, dogs, food and equipment for the western base, probably about the end of January, the ships are to refuel at Valparaiso, Chile. Then they will enter the ice-littered zone south of Cape Horn to set up a second, or eastern, base either on barrier ice of some kind or on land. It is believed that this base will be in the vicinity of Alexander Land, in British-claimed territory. The ships, after unloading the second ice party, will return north.

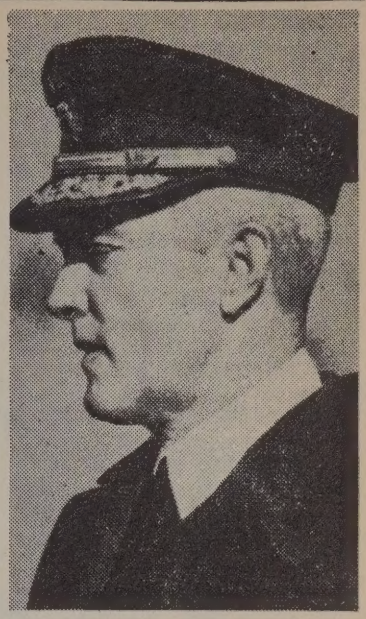
Thus there will be two main parties on the ice, one at the west and one at the east, perhaps a thousand miles apart. They will each be self-sufficient for a period of camp-building and preliminary exploration, for the long Antarctic night to follow, and for the intensive investigations that can start in the daylight hours of Antarctic Spring, beginning in August or later. They will keep in constant touch with each other and with America by



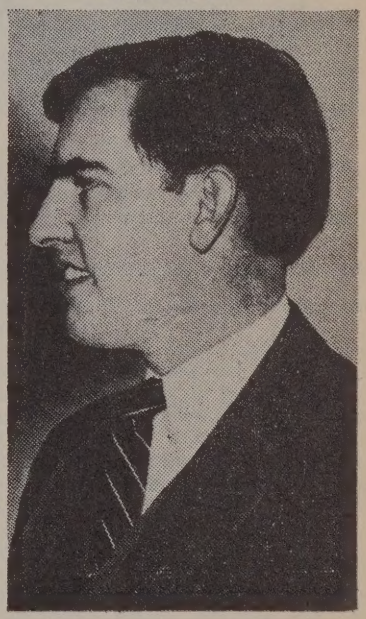
The North Star in Boston with snow cruiser on deck.



WHERE AMERICAN CLAIMS WILL BE STRENGTHENED



Admiral Byrd, head of the trek to the Antarctic, and Dr. Paul A. Siple (below), an aide.
Times Wide World



The large letters on the map indicate claims made on the Antarctic Continent up to now by governments or others: (A) Marie Byrd Land, claimed for United States by Admiral Richard E. Byrd, 1928-30 and 1933-35; (B) James W. Ellsworth Land, claimed for United States by Lincoln Ellsworth in 1935; (C) Falkland Islands Dependency Claim, by Great Britain, 1908 and 1917; (D) Argentina's claim, 1939; (E) Norway's claim, 1939; (F) German claim expected because of aerial mapping last January; (G) and (K) Australian Antarctic Territory Claim, by Great Britain, 1933; (H) claimed for United States by Ellsworth in proclamation dropped from the air last January; (J) claimed by France, 1938; (L) Ross Dependency Claim, Great Britain, 1923. The new American expedition will do its major work between 80° and 150° west longitude, in the sector including (A) and (B). No country has yet formally claimed this sector.

radio. They may set up additional bases. Perhaps parties from both places will reach each other, at the bases or at points between, by plane, dog-sledge, tractor or army tank—for each base will have a share of the four planes. the 140 Malamute huskies, the two tractors and the two light army tanks (with guns removed) that the expedition carries.

It is expected that Admiral Byrd will work out of the western base, at least for a time. But possibly Washington may order him to return from the Antarctic after his men are placed there; if so, he will direct the expedition by radio.

Directors of the Bases

In charge of the western base will be Dr. Paul A. Siple, geographer and biologist, president of the American Polar Society, and veteran of the two previous Byrd expeditions. Directing the eastern base will be Richard B. Black, Department of Interior field representative who was with Byrd in 1933-35. Dr. Siple will have about thirty men at his base, Mr. Black some twenty-six. Each complement will include one or more physicians, expert dog handlers, pilots and mechanics and various scientists who will engage in twenty branches of investigation.

Great interest attaches to one of the innovations of this expedition—a thirty-seven-ton monster of iron and steel and rubber and glass called the "snow cruiser." Resembling a huge transcontinental bus, with a width of nearly twenty feet and four rubber-tired wheels ten feet high, it overhangs far at both front and rear. The wheels, each operated by its own motor, can be raised or lowered by the man at the controls and can be individually turned.

Hopes Are High

The machine, conceived by Dr. Thomas C. Poulter, second in command of the second Byrd expedition, and built by many cooperating private groups, will be used experimentally. Dr. Poulter thinks that it will be able to cross crevasses that tractors and dog teams cannot negotiate.

If the designer's hopes are realized one may read eventually that the snow cruiser has connected West Base with East Base; or has rolled along that coast which no man has ever surely seen (not even Dr. Lincoln Ellsworth, who flew from Graham Land to Little America in 1935); or, perhaps, made of itself a laboratory base, for a period of months, at the Pole itself.

Pre-Fabricated Dwellings Are the Most Startling of Many Innovations the Admiral Is Using in Government-Sponsored Expedition

By Robert J. Bulkley Jr.
New York Herald Tribune

BOSTON, Nov. 18.—With the sailing of the North Star from Boston last Wednesday, the greatest Antarctic expedition in history, both in numbers of men and completeness of equipment, got under way. Remarkable for its size and scope, the expedition is just as remarkable for the speed with which it was organized. It was not until June 30 that the United States Antarctic Service was established, and not until July 7 President Roosevelt appointed Rear Admiral Richard E. Byrd as commanding officer of its expedition.

There had been some preliminary planning, to be sure, but it was not until July, four and one-half months ago, that organization began. Early in the spring Admiral Byrd had resolved to undertake his third expedition to the Antarctic and had started renovating his ship, the sixty-five-year-old Bear of Oakland, which had not seen service since the Antarctic expedition of 1933-'35.

At the same time, officials of the State and Interior Departments, faced with British, French, German, Norwegian and Argentinian claims in the Antarctic, began to give consideration to the advisability of consolidating the work of American explorers — Capt. Nathan Palmer, Lieut. Charles Wilkes, Lincoln Ellsworth and Admiral Byrd. While these explorers had claimed land in the name of the United States, no official government claims had ever been made.

$350,000 Appropriated

At the request of the State and Interior Departments, Congress in April appropriated $10,000 to defray the expense of preparing a United States Antarctic expedition. Authority for the expedition was not granted until June 30, however, when Congress appropriated another $340,000 and authorized the establishment of the United States Antarctic Service. Besides the appropriation, Congress authorized the service to draw on other government agencies for services and equipment.

Appointed commanding officer in July, Admiral Byrd had to work fast. The expedition had to be organized and equipped, and it had to reach the Antarctic in time to establish bases before the Antarctic winter—a winter of intense cold and eternal night—set in in April, 1940. He needed men, he needed means of locomotion, he needed scientific equipment, houses, clothing, food—every necessity of life—for there are few animals on the icy continent and no vegetation except the lichens that grow for two or three days a year on the mountain tops.

He first appointed leaders for his two base camps, Dr. Paul A. Siple and Richard B. Black. Dr. Siple, though only thirty years old, is an Antarctic veteran. He was chosen from 600,000 Boy Scouts to accompany the first Byrd expedition of 1928-'30, and was chief biologist of the second expedition. Mr. Black, a surveyor on the second expedition, is a field representative of the Department of the Interior who last year led the American party which claimed for the United States Canton and Enderbury Islands, possible air bases in the South Pacific.

Civil Service Waived

After the leaders, the rest of the personnel was drafted. Because of the pressing need for time, the Antarctic Service was authorized to hire without regard for civil service rules. The service drew to a large extent on the trained personnel of the Army, Navy and Coast Guard, and in taking on civilians gave preference to men with previous polar experience. Each member of the expedition had to pass a rigid physicial examination before he was signed.

After personnel came equipment. Dr. Siple was named technical director of equipment, in general charge of procurement of all supplies. Mr. Black was sent to Washington as liaison officer between the expedition and other government agencies. Dr. F. Alton Wade, of Miami, University, Oxford, Ohio, geologist of the last expedition, was named scientific co-ordinator in general charge of obtaining scientific equipment.

As one member of the expedition staff said, "We had to cut corners everywhere. All hands were literally working night and day, and going without meals a good part of the time."

There was the experience of previous expeditions to fall back on in choosing equipment. Government agencies co-operated in providing quantities of supplies, manufacturers gave preference to expedition orders, and independent scientific institutions helped meet special needs.

It's the U. S. S. Bear, Now

One of the first essentials was ships. Admiral Byrd leased the Bear of Oakland to the Navy for $1. It was commissioned as a naval vessel and renamed the U. S. S. Bear on Sept. 11. The North Star, an ice ship built in 1932 by the Bureau of Indian Affairs to carry medical supplies and food to Alaska, was lent by the Department of the Interior. The expedition also was to have had the loan of the Coast Guard cutter Northland, but with the outbreak of war in Europe the cutter was ordered to San Francisco Bay to replace the cutter Shoshone, detailed to neutrality patrol duty in the Pacific.

The most spectacular piece of equipment, the giant snow cruiser, which weighs 75,000 pounds loaded and is fully equipped to carry a crew of four men for an entire year, was designed, built and paid for by the Armour Institute of Technology in Chicago, under the direction of Dr. Thomas C. Poulter, senior scientist of the last expedition, and Dr. Wade. Although the craft pursued a luckless course from Chicago to Boston, bogging down in an Ohio cow pasture, suffering mechanical troubles and snarling traffic along the route, Dr. Poulter and Dr. Wade believe it will work well enough on the Antarctic wastes for which it was designed.

Dr. F. Alton Wade, senior scientist of the forthcoming Antarctic expedition, and Richard B. Black, field representative for the Interior Department on the expedition, examine a "mukluk" they will wear on the south side of the world. "Mukluks" are Eskimo-made fur boots.

An innovation which probably will prove even more important to the expedition's success is the pre-fabricated houses, especially designed by United States Army engineers. On previous expeditions the men managed to keep comfortable above the knees, but complained that they could never get their feet warm. The new houses, made of wooden panels filled with a four-inch thickness of insulating material, have double floors, between which warm air from the galley will circulate constantly, heating the entire building from the ground up.

Pemmican, the dried meat which is a staple of the explorer's diet, presented another problem. Experience on previous expeditions showed that ordinary pemmican did not give the body enough heat in the intense cold of the Antarctic. Dr. Robert S. Harris, professor of nutritional biochemistry at the Massachusetts Institute of Technology, prepared a new type of pemmican with a greater proportion of fat to increase the body heat.

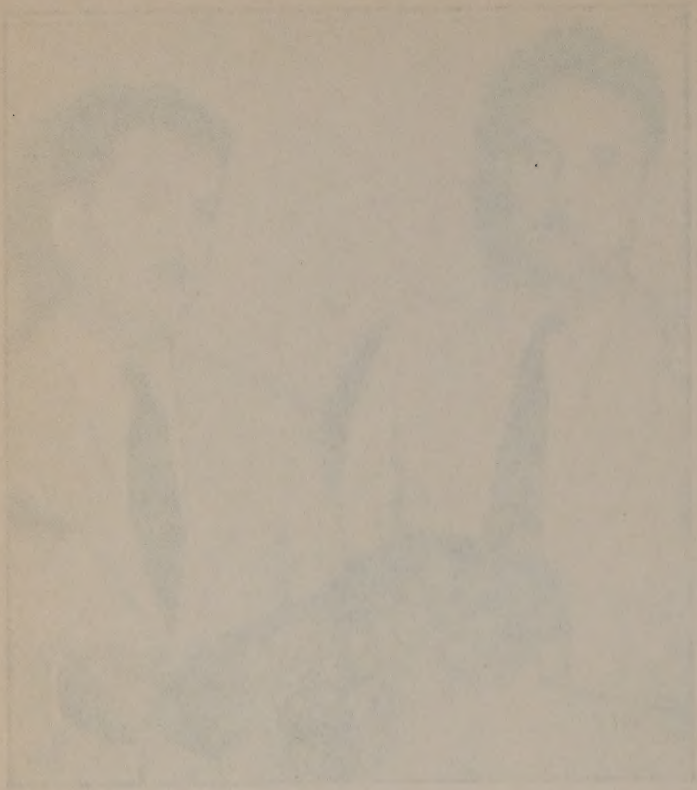
The United States Coast and Geodetic Survey developed a new type of seismograph to measure accurately earth movements in sub-zero temperatures. From the Army came two tanks, stripped of their armor and equipped with driver's cabs, each of which has the pulling power of five dog teams.

From the Navy came four airplanes, as well as navigational and aeronautical instruments. The Army supplied woolen clothing and the Bureau of Indian Affairs supplied furs. From the Library of Congress came hundreds of books and magazines. The Bureau of Fisheries, the Biological Survey, the National Zoological Park and many private and public scientific organizations made loans of scientific instruments.

Manufacturers were called upon to meet many special needs. Tents, for example, had to be orange for visibility, had to have canvas bottoms, and, above all, had to be windproof. Special lenses had to be made for goggles—lenses that would cut down glare but would not blot out colors. Ski boots had to be extra wide for warmth and skis had to be specially designed to fit these boots—and so on through an endless list.

160 Malamute Huskies

Important items for any polar expedition are dogs and radio equipment. Admiral Byrd has 160 Malamute huskies, many of them Antarctic veterans. Seven, indeed, were born in the Antarctic on the last Byrd expedition. As on the last expedition the dogs will be in the



charge of Finn Ronne, a son of the late Martin J. Ronne, who was with Amundsen when he discovered the South Pole in 1911. Mr. Ronne is also a skiing champion and will be the expedition's official ski instructor.

Under the direction of Clay Bailey, a radio operator on the last Antarctic voyage, the expedition has the most powerful and complete radio equipment ever taken to that part of the world. There will be a 500-watt transmitter at each base, capable of broadcasting at regular intervals to the United States. In addition, every mobile unit, the snow cruiser, the airplanes, the dog sledges, will be in regular communication with the bases by means of two-way radio.

Food supplies alone run into huge figures. There are 67,000 pounds of frozen meat, two tons of canned beans, three tons of dried beans, twenty-five tons of flour, 5,000 pounds of eggs and egg powder, and a ton of powdered milk, equal to 16,000 quarts of liquid milk. But all this is none too much, for sixty-three men will be left at the two base camps to stay until the spring of 1941, and should relief be slow in coming, even this amount of food would have to be augmented with penguin eggs and unpalatable seal meat.

The purposes of the expedition are threefold. First, it holds itself ready to make territorial claims if instructed to do so by the State Department. On Nov. 10 the State Department issued a statement of policy to the effect that settlement of Polar regions, not merely discovery, was necessary for claims to sovereignty. This expedition will mark the first attempt at anything approaching permanent settlement. If by 1941 Congress will vote more appropriations, the leaders of the expedition are prepared to maintain their bases, perhaps with changes in personnel, for a period of years.

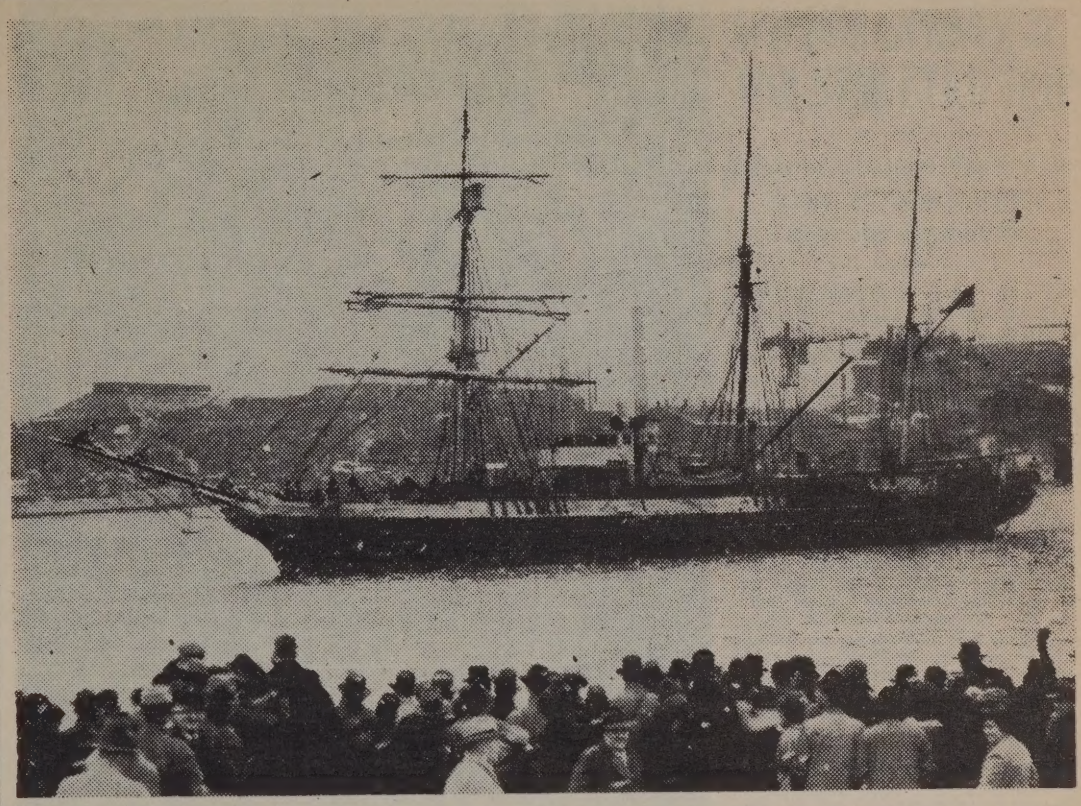
Secondly, the expedition will attempt to map the longest uncharted coastline in the world, the thousand-mile stretch between Marie Byrd Land and Alexander Land. The two base camps will be set up at the ends of this coast line, and exploring parties will work from the bases.

The third purpose is that of research in several branches of science, including geography, biology, oceanography, seismology and physics. Studies will be made of the upper atmosphere and of cosmic rays. A meteorological station will be established, which may prove of great importance to trans-oceanic aviation. Geological studies will be made which may result in the discovery of valuable minerals. Vast fields of low-grade coal have alalready been observed, and this discovery encourages the belief that there may be more valuable deposits.

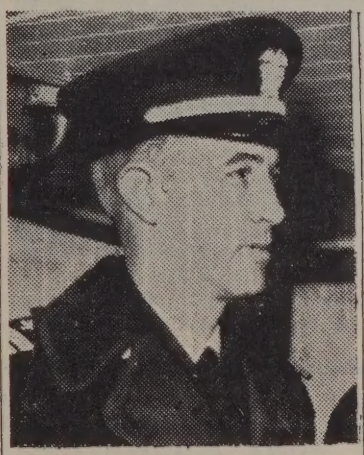
Climate's Effect on Man

Dr. Siple will conduct special studies to determine the effects of sustained low temperatures and other Antarctic conditions on the human body. He received the degree of Doctor of Philosophy from Clark University last June, writing his thesis on this subject, which he calls "human geography." He found on the last expedition, for example, that a man uses five times as much energy in the Antarctic as in a temperate climate, and that a man lying in his bunk in the Antarctic, doing nothing, burns enough energy to keep a day laborer going in New England.

Something of the size of the expedition is suggested by the fact that the North Star and the Bear are loaded to the gunwales with more than 5,000 separate items of equipment—toothpaste and dynamite; paper clips and electric generators; apple butter, gasoline and rope; phonograph needles, typewriters, dog food and hacksaw blades; popcorn, magnets, erasers, rugs and vitamin pills; safety pins, candles, turbine pumps and salted almonds; ice axes, shoelaces, washing machines, thread and thermometers. There are no general stores in Little America.



ANTARCTIC BOUND—A jaunty ship with a naval crew and howling sled dogs on deck, the U. S. S. Bear appropriately left snowy Boston for South Polar regions



Comdr. Richard H. Cruzen of the Bear

SECOND BYRD VESSEL SAILS IN SNOWSTORM

Ancient Bear Leaves Boston for Antarctic Expedition

BOSTON, Nov. 22 (AP).—Bucking a foretaste of the storms she will encounter in polar seas, the sixty-eight-year-old barkentine Bear headed southward tonight for the Antarctic after slipping away from this port in a swirling snowstorm, whipped up by a stiff nor'easter.

Back in the service of the Navy again for the first time since she fought the Arctic ice floes in 1884 to rescue survivors of the hapless Greely expedition, the historic sealer, revenue ship and veteran of one other Antarctic venture completed the fleet for the government's exploratory and possibly land-claiming expedition to the bottom of the world.

The Bear, which will make a stop at Norfolk, Va., to pick up an airplane, will refuel at Panama, and then turn her oaken hull almost due south for the ice-rimmed Bay of Whales. Meeting near Little America about Jan. 1, the two ships will unload part of their stores and supplies at that base, then strike out for an east base to be established somewhere along a 1,000-mile stretch of uncharted coastline.

The ice-scarred Bear had new sails furled to her broad yardarms, and it was under the power of a new Diesel engine that she slipped into the murk of the harbor today as ship whistles shrilled a farewell. Recently strengthened decks were wet with new snow. Great shouldered husky dogs, their coats flecked with snowflakes, yelped excitedly as they strained at chains lashed to deck rails.

Lieut. Comm. Richard Cruzen, her skipper, said he would make "whatever headway" was possible and seek shelter only if the weather became too bad. He said he would follow the coast to Norfolk.

Several hundred persons, sweethearts and wives and members of families, called good wishes across the widening expanse of water as the Bear pulled away from her dock. They had placed Christmas gifts aboard, which will be opened en route.

Byrd Confers in Washington

BOSTON, Nov. 20 (UP)—Rear Admiral Richard E. Byrd, commander of the government's Antarctic expedition, left here for Washington tonight.

WASHINGTON, Nov. 22—Rear Admiral Richard E. Byrd conferred with government experts at a meeting in the State Department today on plans for his Antarctic expedition. There were present representatives of the navy, the coast guard and the Interior and State Departments.

The conference was arranged, it was explained, to give consideration to final details before Admiral Byrd leaves to join the expedition.

HAVANA, Nov. 25 (UP)—Rear Admiral Richard E. Byrd arrived here today by plane from Miami en route to Panama, where he will board his ship, the North Star, for his latest journey of exploration to the Antarctic.

MIAMI, Fla., Nov. 25 (AP)—Leaving here today by plane for Havana and the Canal Zone, Admiral Byrd said that he expected to board the flagship North Star

NORTH STAR STARTS FOR THE ANTARCTIC

Admiral Byrd Says Settlements on Ice May Be Maintained for Several Years

BOSTON, Nov. 15 (AP)—Laden with supplies ranging from food to phonograph records and from sled dogs to a twenty-seven-ton snow cruiser, the motorship North Star sailed just before dawn this morning on the first leg of her voyage to the Antarctic.

The crew had said goodbye to relatives and friends yesterday. With the declaration that he believed Little America might provide a new and "safer" base for a United States-Australian air trail, Rear Admiral Richard E. Byrd, leader of the government's expedition to South Polar regions, had seen that everything was shipshape for the voyage.

He remained behind to complete the outfitting of the expedition's second vessel, The barkentine Bear, which will follow the North Star on the 12,000-mile journey. They expect to keep a rendezvous about New Year's Day before establishing the bases at which the explorers hope to live for about thirteen months.

Speaking of his plans Admiral Byrd said:

"The idea would be to continue settlement on the ice for some years, possibly five or six," explaining that it was hoped to make the settlement of a semi-permanent nature, depending upon the wishes of Congress. "The present group would be relieved by others after thirteen months, and although some of the first might remain down there, once is enough for most men."

By such a settlement the explorers hope to fortify previous United States claims on the territory.

The expedition also plans further exploration of some 675,000 square miles of polar unknown, Admiral Byrd said, adding that he expected fifteen different branches of science would be benefited by various researches in a land the admiral has termed "the great weather maker," and added:

"It is not beyond the realm of possibility in the distant future that a new air route to Australia could be established by way of Little America, eliminating long stretches of non-stop, over-water flying."

Lieut. Comdr. Isak Lystad said the vessel would "ride the 180th meridian" in the last lap of its trek to the Antarctic, and he added:

"That's the best possible territory in seas where you sometimes see icebergs miles and miles in length."

Richard B. Black of Honolulu, who will command one of the two bases on the ice, said the ships would reach Little America when "it's daylight around the clock," and when the thermometer bobs between 15 degrees below zero to 20 degrees above.

By April 22 the Antarctic night will have set in, lasting to Aug. 22, but at the east base, 1,000 miles away, the period of complete darkness will last only two and one-half months, he said.

During December, January and February," Mr. Black added, "we might even find a pebbly beach near our east base, with little snow. The temperature at that time probably will be about 43 degrees above zero."

"But the unknown will open right in our backyard."

Rear Admiral Richard E. Byrd, commander of the expedition, conferring with Dr. Thomas C. Poulter, left, who has charge of the snow cruiser, and Isak Lystad, center, master of the North Star.

Times Wide World

North Star Leaves Philadelphia Amid Appropriate Setting

PHILADELPHIA, Nov. 21 (AP).—Rear Admiral Richard E. Byrd's Antarctic flagship, the North Star, bade the United States a snowy farewell today.

With a cold north wind driving big flakes across her decks, the 1,434-ton wooden craft headed down the Delaware River toward the Atlantic on the second leg of her voyage to Little America. She arrived here last week from Boston to take on planes and weather instruments.

The crew of seventy donned cold-weather clothes as they battened down hatches and made last-minute checks on a cargo that includes man's most modern devices for conquering the polar regions.

Sailing was delayed for two hours while the expedition's mountainous snow cruiser, Penguin I, was made more secure. Other equipment ranges from dogs to army tanks. Two airplanes, complete with ski landing gear, were stowed away yesterday.

Visitors to the North Star here found the crew well equipped for a long stay in the polar region, with provisions for entertainment as well as work. Aboard are more than 100 games, including two billiard tables, softballs, cards, darts, checkers, chess and backgammon. There also are portable radios and phonographs.

PHILADELPHIA, Nov. 17 (AP).—As if Admiral Richard E. Byrd's ponderous snow cruiser hadn't had trouble enough on land, the ship bearing it toward the Antarctic met with mishap today.

The North Star, one of two expedition vessels, crashed into pilings as it docked to take on additional cargo. There was no serious damage. Indeed, Capt. Isak Lystad felt better about the whole thing as a result.

"The accident," declared the captain, "has established the seaworthiness of the ship—especially that she could plow her way through ice floes."

MAWSON BACKS BYRD PLAN

Explorer Favors Air Route Base in Little America

ADELAIDE, Australia, Nov. 20—Commenting on Rear Admiral Richard E. Byrd's proposal to use Little America as a base for an air route between America and Australia, Sir Douglas Mawson, noted polar explorer, said today that there was much to substantiate the idea. Two excellent reasons that Little America was suitable for an air base were its dependable calm weather and hard landing surfaces, he said.

Although not wishing to discuss the relative merit of Little America as flying-boat or land-plane base, Sir Douglas observed that the water in the vicinity was closed with ice about nine months of the year. Several places nearer to Australia were usable as a stop on the air route, he said, but apparently Admiral Byrd's motive was to avoid the risk of ocean flying.

SCIENCE STRESSED FOR NEW BYRD TRIP

Explorer Consults Experts on Scope of Government's Antarctic Expedition

WASHINGTON, July 28.—The scientific phases of the government's coming Antarctic expedition were discussed today at a conference under the auspices of the National Academy of Science called by the National Research Council which is its operating agency.

Thirty-two scientific men from twenty government agencies and half a dozen of the nation's institutions of learning and research participated with Rear Admiral Richard E. Byrd, commander, in an exchange of views as to the scope of the expedition's scientific program.

Dr. Isaiah Bowman, president of Johns Hopkins University, an authority on geography and polar exploration, presided, assisted by Dr. Henry B. Bigelow, director of the Oceanographic Institute at Woods Hole, Mass. All present joined in the pooling of ideas as to the scientific work to be done, many indicating what contributions in material or personnel they were prepared to offer to the management of the expedition.

Although necessarily tentative in character at this first meeting, today's discussions were definite as regards the importance of the scientific work to be undertaken.

Plans for meteorological observations and for the mapping of a region some 5,000,000 miles in extent, 3,000,000 miles of which is still to be explored, were discussed at length in the forming of a program in which geology, terrestrial magnetism, seismology and oceanography will have their no less prominent part.

U. S. Wants Byrd to Hunt Earthquakes in Antarctic

He Gets Special Seismograph for Use in Extreme Cold

WASHINGTON, Nov. 4 (AP).—If Admiral Richard E. Byrd has any spare time on his forthcoming Antarctic expedition, the government wants him to look for earthquakes. A special seismograph — designed by H. E. McComb, of the Coast and Geodetic Survey, to operate accurately in extreme cold weather — has been given Byrd for the purpose.

Survey officers said instruments in other parts of the world have recorded a dozen minor quakes believed to be in the Antarctic and accurate information on any new ones recorded on the spot would be helpful,

Snowmobile Placed Aboard Byrd Ship

Tide Raises Platform To Position Level With Dock

By the Associated Press.

BOSTON, Nov. 14.—Like a motorist parking his car in a cramped space, Dr. Thomas Poulter drove the United States Antarctic expedition's immense snowmobile aboard the motorship North Star today

A platform had been laid upon upright oil drums stored on the forward deck of the North Star and when the tide had raised the platform to a position level with the Army Base dock, the huge snow cruiser was edged carefully aboard, backed off to improve its position, and driven on again. A Navy tug braced the 1,450-ton North Star against the dock.

When finally parked, the great vehicle's forward end protruded about two feet over the port rail, with its wheels 10 feet from the edge of the deck. The rear wheels were flush with the starboard rail and the rear end, from which the "rumble seat" section was amputated, protruded four feet beyond the rail. There remained room enough beside it for a second snowmobile. Alongside were placed two spare tires, mounted on wheels with hubs large enough for a man to hide within one of them.

Ten feet of the cruiser's rear end was sliced off with acetylene torches so that the ponderous machine could be stowed on deck and fastened securely. The severed part, of course, will be rewelded in the Antarctic, where the snowmobile is to be used as an igloo on wheels for the Government's expeditionary forces covering vast, uncharted areas.

The Penguin, piloted by Dr. Poulter, finally reached the Boston Army base yesterday after a troublous 1,020-mile trip from Chicago. All hands expressed satisfaction with its performance.

Four to Live Abroad

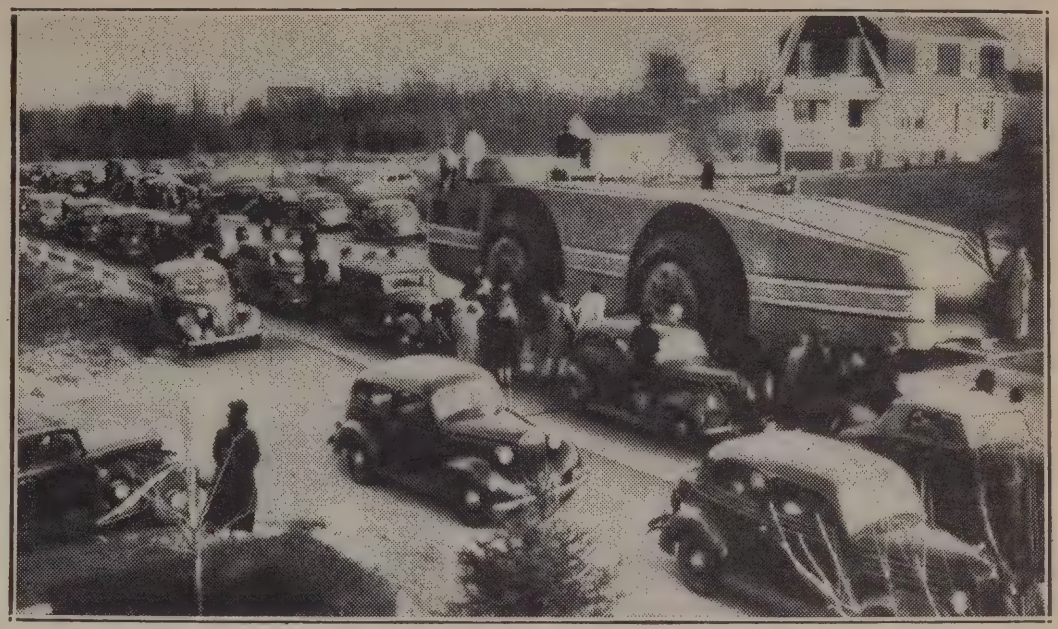
When and if Penguin is safely debarked in the Antarctic waste, it is planned to have four men live aboard it for at least three years. It is a self-contained home on wheels, its body built like a toboggan so that it can glide forward on the snow. The huge wheels—each 10 feet in diameter and equipped with pneumatic tires so large that the cruiser has 12 square feet of rubber on the ground at a time, are each equipped with hydraulic control so that they may be raised. If a crevice is encountered, the forward wheels can be lifted and the rear ones can push the big truck across, after which the process is reversed and power applied to the front wheels to haul the cruiser ahead. A gap in the ice of not more than 15 feet in width will not prevent the cruiser from spanning it.

There is a galley, sleeping quarters with four bunks, a photographic laboratory, a $50,000 scientific laboratory, a radio room with two-way equipment, a chart room, storage for food supplies sufficient for a year at a time, for 2500 gallons of fuel oil for the two 150-horsepower Diesel engines and for 1000 gallons of gasoline for the motor of the five-passenger cabin airplane, equipped with skis which will ride atop the cruiser when it lumbers over the frozen wastes to give to the world of science a lot of new data.

Dr. Poulter designed the craft and superintended its building. Its cost was approximately $150,000, which was defrayed by friends of the Research Foundation of Armour Institute and by 70 co-operating manufacturers. Penguin is merely loaned to the United States Government for the forthcoming South Pole expedition. Each of the motors is connected with a traction-type generator and on the hob of each wheel is a 75-horsepower electric motor which does the actual propelling.

According to specifications, which will probably be doubted by some of the harassed police along its course to date, the cruiser can turn in its own length, move sidewise at an angle of 25 degrees, climb 37 per cent grades and travel at a maximum speed of 30 miles per hour. Its cruising range is 5000 miles. Equipment includes special aerial cameras. Penguin will operate within a 300-mile radius of its moving base and it is hoped that it, together with its airplane, will be able to accomplish more in the way of exploration and survey than have all previous expeditions combined. Dr. Poulter will remain in charge for three months before returning.

His crew will include Corporal Felix Ferrento, radio operator; Theodore A. Petras, airplane pilot, both of the United States Marine Corps;; Charles Meyer, chief machinist's mate, U. S. Navy; and "Navy," the Labrador husky dog that is the pet of Dr. Wade, who is chief scientist of the United States Antarctic Expedition and who was a member of the last Byrd expedition, as was his dog.



The 37 ton snow cruiser on way to Boston

Designer Satisfied With Snow Cruiser

Nov. 13

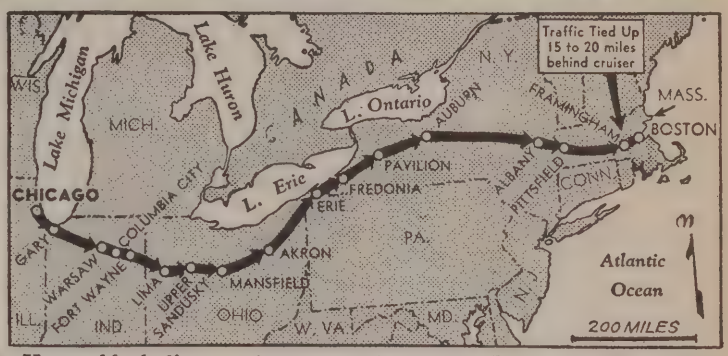
Dr. Thomas C. Poulter, designer-driver of "the biggest job on wheels" today said as he reached the army base, that he was "entirely satisfied" with his snow cruiser's performance.

Asked about going into a ditch in Ohio, an oil-line break in Ohio and wheel trouble in Pennsylvania, he said:

"The cruiser actually moved off the blue prints and onto the road without preliminary testing, without even as much testing as is given an ordinary family car. We had to take the kinks and the bugs out of her while we were actually learning about her. But now I think we have got those kinks out of her."

Questioned about the exact use of the cruiser in the Polar regions, he said:

"Everything feasible will be done with the craft, but nothing foolish. We are not out to break any records."



Heavy black line marks route taken from Chicago to Boston by snow cruiser built for Admiral Byrd's antarctic expedition.

Byrd Party Will Search Antarctic for Radium

Scientist Says 'We're Apt to Find Anything Down There'

PHILADELPHIA, Nov. 18 (UP).—The expedition of Rear Admiral Richard E. Byrd will search for radium deposits in the frozen wastes of the Antarctic, it was disclosed today.

"Yes, we will search for radium," Chief Scientist Dr. F. Alton Wade, a member of the last expedition to Little America, said. "We're apt to find anything down there. The world's second largest coal supply is located in Antarctica, as are countless other minerals.

"However, on this first leg of the present expedition we are taking no special equipment in the way of scientific instruments which would determine the presence of radioactive elements."

It was revealed further that the Franklin Institute would send two seismograph units for installation at Little America to study earth tremors at a hitherto inaccessible point.

THE MAN ON THE COVER of this issue is Lieutenant Charles Wilkes, one of America's foremost explorers. It is from a painting by T. Sully.

This issue of "The Polar Times" was held a month in order to record the departure of The United States Antarctic Service.

SNOW TEST DEVICES PROVIDED FOR BYRD

Bureau of Standards Is Supplying Instruments to Find Temperature and Density

WASHINGTON, Sept. 30—Apparatus which the Byrd Antarctic Expedition will need to determine the temperature and density of snow and ice at various depths is being provided by the National Bureau of Standards.

Because of the unusual conditions under which the scientific work must be done, much of the apparatus has to be specially designed, the Comerce Department said today. The expedition is planning to install thermometers in the snow at the surface and at various depths down to 160 feet, to determine not only the temperatures but also how the temperatures are influenced by the air temperatures during the diffeernt seasons. In addition, measurements will be carried out at different stations to determine the influence of the local topography on the subsurface temperatures.

The Bureau of Standards is supplying the expedition with forty-two electrical resistance thermometers and two wheatstone bridges, including such accessories as switches and extra galvanometers. The instruments will be graduated from plus 50 degrees to minus 94 degrees Fahrenheit. The thermometers will be located in holes about two inches in diameter. Specially designed drills for making these holes are being constructed. Electrical heating devices are also being provided to melt holes in the snow or ice in case it is not possible to drill the holes to the full depths with the limited manpower available.

Apparatus and materials for determining the density of the snow and ice and for determining the amount of the communicating air spaces consist of the following: balances, sampling devices for obtaining representative samples of snow; triethylbenzene to be used for filling the communicating air spaces in the density samples; and a number of standards for determining the density of the various liquids, such as triethylbenzene, kerosene, etc., which will be used in determining the density of the snow.

Because it is difficult to estimate the accuracy which will be obtained with the apparatus at the extreme temperatures at which it will be used numerous standards, such as resistance coils, freezing point samples and others are being provided for the purpose of testing and calibrating the apparatus under the conditions encountered in the Antarctic.

Byrd's New Dairy Foods

New dairy foods were made in the laboratories of the Federal Bureau of Dairy Industry out of skim milk and whey for Admiral Byrd's men during their stay in the Antarctic.

First of all there's a new kind of dried pea soup, made with whey powder; then to eat with the soup a new kind of wafer, which is a mixture of potatoes, skim milk, and salt; and farther down on the list new kinds of candies that contain whey solids.

The dried soup is a precooked dry powder which makes a complete soup when one can of it is mixed with four cans of water and boiled. It contains 65 per cent split pea solids, 25 per cent whey solids and 10 per cent fat. It has the advantage of being easily transported and quickly prepared. Also, it keeps well. The dairy scientists think that the fat it contains will not turn rancid for at least a year at room temperature or below.

The skim milk and potato wafers resemble potato chips, but contain no fat to become rancid. The wafers are made by drying or toasting a mixture of boiled potatoes, skim milk and salt.

Two kinds of candy—caramels and fudge—were made by formulas that include 25 per cent whey solids. The candy is superior in food value to ordinary candies, because its whey solids displace some of the cane sugar and corn syrup. It contains extra milk sugar, milk salts, milk albumin and water-soluble vitamins. Also, it is slightly less sweet than ordinary candy.

Wives of Antarctic Explorers Will Check Up on Men by Radio

Interesting Jobs Await Most of Girls Byrd's Expedition Will Leave Behind

By the Associated Press.

BOSTON, Nov. 11.—Short-wave radio will enable the stay-at-home wives of Admiral Byrd's Antarctic explorers—including two newlyweds—to check up on whether their ice-bound hubbies are wearing their winter undies during an 18 months' stay 12,000 miles from the home fires.

Interesting jobs, ranging from nursing to running a Norwegian restaurant in Brooklyn, will help some of the girls who are being left behind to keep their chins up while the men are busy putting new chunks of ice on the world's map.

Eight of the "veterans" in what might be called the Antarctic women's auxiliary have been working for several weeks at expedition headquarters, attending to details that will add to the comfort of the adventurers.

They Do the Errands.

With the eagerness of young brides preparing a picnic lunch, they have packed pemmican and biscuits in cartons. They drive cars on hurry-up errands. They answer telephone queries on everything from the sailing date of the expedition to the present status of Admiral Byrd's penguins. They do secretarial work for the ship commanders, scientists and dog trainers.

A few of them have prepared Christmas baskets, containing "little jars of preserves, cigarettes and homemade cookies" to be opened by the men on a Christmas Day that may find them ducking icebergs in gale-swept waters near Antarctic's great Ross ice barrier.

"But I'll bet they will open them long before Christmas," smiled Mrs. Vernon D. Boyd of Uniontown, Pa., wife of the expedition's master mechanic, who says she knows the worry of being married to an ice fighter.

Heard Dogs Bark By Radio.

"When Vernon went on the last expedition," she said, "my little boy and I used to wait for that radio broadcast every Wednesday night at 10 o'clock. We'd wait to hear the barking of the dogs, and then we'd know that everything was all right down there on the ice."

This time, she says, she has made arrangements with several amateurs to send personal messages to her husband.

But a recent newlywed among the auxiliary has a more novel idea.

"I'm going to try to learn radio code and try to talk to my husband that way," said pretty, 20-year-old Mrs. Herbert G. Dorsey, jr., who is back at her studies as a Wellesley senior following her marriage a little more than a week ago to one of the expedition meteorologists.

When her bridegroom of a fortnight sails away, Mrs. Dorsey will knuckle down to an art course at Wellesley and plans to go to art school next year.

Another Works in Restaurant.

Mrs. Finn Ronne, wife of the man who has charge of the expedition's sledge dogs, will keep busy serving Norwegian delicacies at her restaurant in Brooklyn.

Mrs. Richard Black of Honolulu, T. H., wife of one of the base leaders in Antarctica, will do a little traveling herself—to Mexico, to study art.

Back to their jobs as registered nurses will go Mrs. Lewis S. Sims of Augusta, Ga., wife of one of the expedition doctors, and Mrs. Harold Gilmour of Boston, whose husband is assistant supply officer for the Polar outfit.

Indefinite are the plans of Mrs. Paul Siple of Erie, Pa., but she knows more than most what this Antarctic business is all about. When her husband, another base leader, was 18 years old, he was selected from among youths from all over the country to go with Admiral Byrd's first expedition to Little America. He also was a member of the 1933-1935 expedition.

Another Has Her Troubles.

Another one of the wives who has been having herself a time is Mrs. Helen Poulter, wife of the man who is trying to coax the big snow cruiser overland from Chicago to Boston. She is in the party accompanying the big roadhog.

A second bride among the stay-at-homes is Mrs. Anthony W. Kelczewski of Passaic, N. J., and Schenectady, N. Y., but she has a little more time to see her husband, because he is a seaman on the old barkentine Bear, which won't sail for at least another week.

With 18 months to get all dolled up for it, at least three of the wives already are planning their next "date" with their husband.

It entails a little matter of sailing to New Zealand—to meet the homecoming ships from Little America.

Red Cross Prepares For Polar Sunburns

WASHINGTON, Nov. 16 (AP)—Ever hear of getting sunburned at the South Pole? Well, the Red Cross did.

"Strangely," says a Red Cross announcement, "sunburn under the antarctic sun can sometimes be more serious than that found on Florida's sunniest beaches."

Accordingly, Red Cross instructors who will go to the pole with Byrd's antarctic expedition will conduct sunburn experiments.

BYRD WILL BOTTLE AIR OF THE ANTARCTIC

Specimens Will Be Used in Testing Temperature Effects

WASHINGTON, Nov. 11—The Byrd Antarctic Expedition, sponsored by the Federal Government, will bring back eight bottles of Antarctic air.

The atmosphere from the south polar region, it was explained at the Commerce Department, would be used in a laboratory test of the theory that extreme temperature changes produce slight variations in the composition of the earth's atmosphere.

Byrd's Ship Bear Off Virginia Coast

NORFOLK, Va., Nov. 26 (AP)—The U. S. S. Bear, Rear Admiral Richard E. Byrd's Anarctic expedition ship, sailed through the capes today bound for Panama.

The Bear put in here yesterday morning to take on 80,000 pounds of pig iron ballas and an all metal twin-motored plane to be used in polar exploration.

The Bear is expected to meet the North Star, second of the expedition ships, in the Ross sea in early January.

Wool From Whales.

The problem of producing artificial wool fiber appears to have many solutions. A Japanese scientist has produced it from whale meat. S. Sasaki, of the College of Agriculture of the Kyushu Imperial University, has, according to the Tokio correspondent of the American Chemical Society, succeeded in fermenting the whale meat in a chemical solution so that it was reduced to a viscid mass which could be forced through small orifices and spun into a thread.

The fiber floats on water and is reported to have considerable strength. The viscous mass of the whale meat ferment can be mixed with cellulose xanthate, one of the intermediate substances used in producing rayonlike fibers, and produces a silklike fiber. Successful efforts have been made in this country and in Italy to produce an artificial wool from the casein in milk.

Byrd to Keep In Radio Touch With World

By a Staff Writer of The Christian Science Monitor

BOSTON, Oct. 27—Because a Cambridge radio manufacturer turned out some versatile sets, listeners on the short waves in Boston, and the whole world, for that matter, may be able to get first-hand news from the third Byrd Antarctic expedition direct from Little America.

Clifford A. Harvey, whose company has manufactured some of the radio equipment for this trip to the South Polar region, said that direct radio contact with the United States, instead of by relays as in the past may be possible through the transmitters of the expedition. All the units of the expedition, even to the dog sledges, will have radio receiving and communicating equipment.

A total of 38 transmitters are now being stowed aboard the expedition steamer North Star at the Boston Army Base for what will probably be the most thoroughly equipped Byrd expedition from the communications angle. In addition there are a number of powerful receivers, two Diesel generators to supply current for the base as well as for the radio equipment, several tons of batteries, cartons of tubes and innumerable replacement parts supplied by various other manufacturers.

Four 500-watt transmitters will be Little America's main contacts with the outside world and for program relays to the American radio networks. Four of the transmiters are 125-watters, of which one, at least, will be placed aboard the giant "snowmobile" that is even now coming on the road to Boston from Chicago where it was manufactured. Five other transmitters are 30-watters.

The most unusual radio items are the 25 "trail" transmitters designed for use with dog sledges or on other small parties where weight elimination will be a very necessary factor. Each of these sets has an output of 12 watts, will be able to communicate with the base in code only and receive the voice transmissions from the base stations. They will be powered by small hand-operated generators which supply 400 volts.

Non-commercial broadcasts from Antarctica, "available to all major networks," will be in order about the middle of February, an official of the expedition said

"It is planned to have a fifteen-minute broadcast about once every two weeks," said Roger Hawthorne, field representative of the Antarctic service, adding that the programs would be "educational and informative," based on the progress of the expedition.

"If things are quiet, there will be no broadcast," he said, "but if there are important developments, a program may be given at any time, with the networks being informed in advance by short-wave message."

24 Byrd Tents Campers' Delight

By a Staff Writer of The Christian Science Monitor

BOSTON, Nov. 6—While Rear Admiral Richard E. Byrd's snow cruiser slowly hobbles along toward Boston from Chicago over tortuous high-speed American highways, a local sailmaker is rushing to completion 24 Antarctic trail tents for housing the 63 members of the expedition who plan to remain at the two bases in Antarctica.

Unlike the snow cruiser, a quick glance at the tents reveals little out of the ordinary with the exception, perhaps, of the tubular entrances and the color, a brilliant orange. This bright color was carefully selected to make the tents easily visible against the endless white wastes of the Antarctic.

Tubular entrances on both ends of the tents are the only other departures from standard tent equipment which are immediately noted. These entrances, when held open, resemble, somewhat, the tunnel of an igloo except that they are cloth and fall flush with the tent when not in use. At night, the tubular section is drawn into the tent and the ends securely tied with tape to keep out wind and snow.

"All fours" and plenty of skill are required to enter and leave these circular portals with their 29-inch diameter openings and tubular flaps which are 36 inches in width.

Closer inspection shows these tents to be almost as different in detailed construction, when compared with custom tents, as the snow cruiser is in comparison to other motor vehicles.

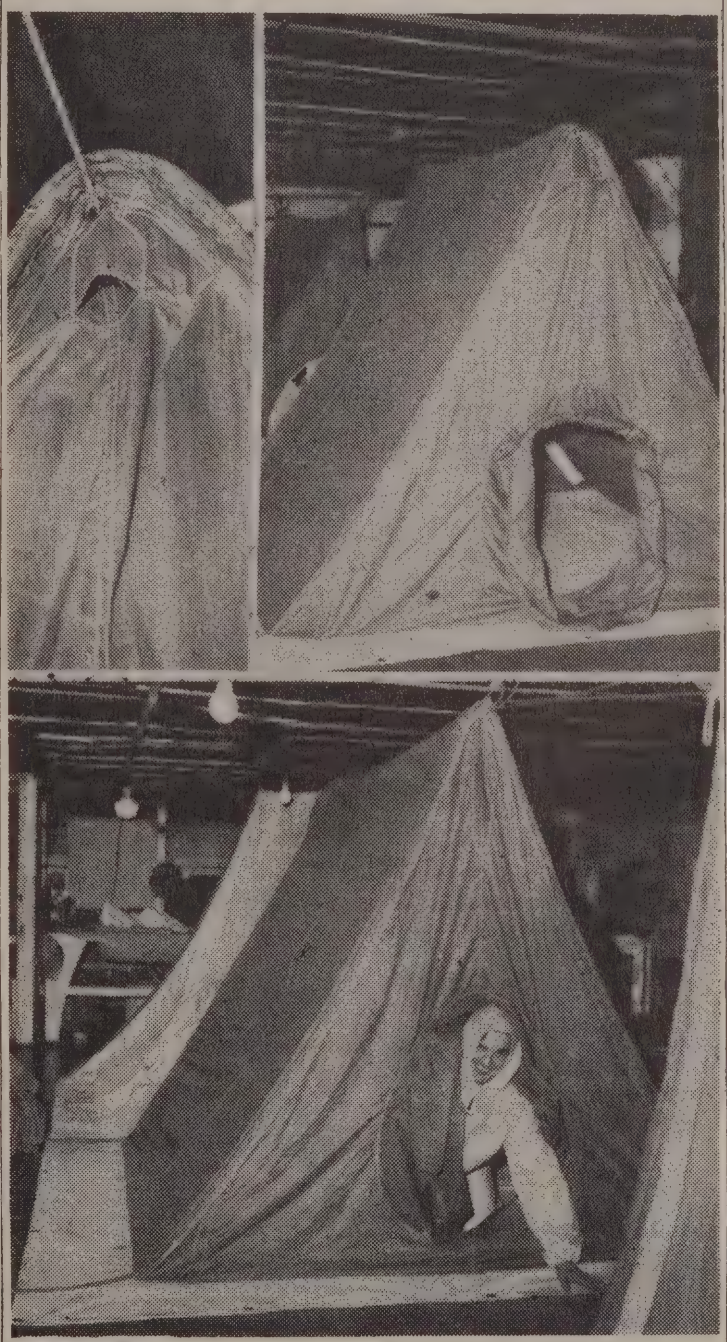
Even the manner of erecting these tents is a departure from the usual side-by-side method. Instead, they are placed end to end in a straight line. Between tents, there is a 7-foot "extension fly" which is connected to the tents on either end by 16-foot zippers. These "flys" are white, have no floors and are used as kitchens. Each one is equipped with a tubular door on the side and a chimney, also of tubular construction, about five inches in diameter.

To a camping enthusiast, one of the most attractive features of these trail tents is their weight which is one-quarter to one-third that of regular camp tenting equipment.

The use of "Byrd cloth," a very light wind and snowproof material, for everything but the sewed in floors, is responsible for the difference in weight. One tent, with a 7-foot square floor inside and six feet from floor to peak, weighst only 17½ pounds. On the outside, the heavy canvas floors extend about 14 inches beyond the sides of the tent.

Another feature, which would appeal to most campers, is the arrangement of the poles which fit in pockets running from the top of the tent to the corners and which need not be removed when the tent is taken down.

Ventilation is supplied through zippered slits in the top corners of the front and rear of the tents. These are shielded on the outside by heavy canvas.



Thaxter A. Williams

Heavy Canvas to Keep Out Cold Antarctic Winds

Upper left: Heavy canvas shield over zippered slits for no-draft ventilation. Upper right: Tubular entrance with tube-like section rolled back, showing in rear corner a small section of a white canvas pocket built in all four corners to hold tent poles. Lower: All fours are required to enter or leave Antarctic trail tents. White section in rear is an extension fly used as a kitchen between tents.

FOUR NAMED TO PLAN ANTARCTIC EXPEDITION

WASHINGTON, July 13 (AP).—President Roosevelt has assigned four government officials to draft plans for the expedition which will sail in October to claim for the United States a vast segment of the Antarctic Continent.

The executive committee is composed of Dr. Ernest H. Gruening, director of the Interior Department's territorial division, which is in charge of the expedition; Rear Admiral Russell R. Waesche, Coast Guard commandant; Captain Charles C. Hartigan of the navy and Hugh Cumming, State Department Antarctic expert.

Rear Admiral Richard E. Byrd, chosen leader of the venture by Mr. Roosevelt last week, was appointed an ex officio member of the group.

A second committee, to be known as the "science advisory board," will be appointed later.

The Polar Times

Published March and October by the AMERICAN POLAR SOCIETY, Care American Museum of Natural History, Central Park West at 77th Street, New York, N. Y.

AUGUST HOROWITZ, Editor.
HERBERT R. LOGES, Art Editor.

THE POLAR TIMES highly recommends "The Polar Record," published January and July by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive THE POLAR TIMES twice a year.

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WILKES EXPEDITION CENTENARY

The Centenary of the First United States Exploring Expedition, which consisted of five ships under the command of Lieutenant (afterwards Admiral) Charles Wilkes, U.S.N., will be celebrated by a special memorial meeting of the American Philosophical Society to be held at the rooms of the Society in Philadelphia on Feb. 23 and 24, 1940. This expedition explored lands and seas of the Atlantic and Pacific Oceans throughout the period from 1838 to 1841. It made extended surveys and elaborate scientific observations throughout the regions explored. The expedition carried a distinguished body of scientists, including the great geologist, mineralogist and zoologist, James Dwight Dana.

In the southern summer of 1840 the expedition discovered a stretch of Antarctic coastline, 1,500 miles in extent which now bears the name of Wilkes Land in honor of its discoverer. Wilkes completed his survey of this coast on Feb. 22, 1840. He was not the first to discover Antarctic land—Captain Nathaniel Brown Palmer of Stonington, Conn., had first visited Antarctic land within the American sector on Nov. 18, 1820—but Wilkes through his numerous landfalls within a wide sector was the first to prove its continental character.

The morning session of the Philosophical Society on Feb. 23 will be devoted to the Wilkes Expedition, the afternoon session of the same day to America in the in the Antarctic, and the morning session of the next day to America in the Arctic. There will be papers on the program by officials of the State and Navy Departments and by distinguished scientists and explorers.

—Prof. William H. Hobbs
Ann Arbor, Mich.

INTERNATIONAL POLAR CONFERENCE

In consequence of the state of war now prevailing in Europe, the International Exhibition for Polar Exploration at Bergen, Norway in 1940 has been temporarily postponed. It therefore naturally follows that the Polar Exploration Conference planned in conjunction with the Exhibition will have to be deferred until such time as the plans for the Exhibition can be realized.

—Dr. Adolf Hoel
Oslo, Norway

High-Energy Food for Byrd Is Devised By Adding More Fat to Old-Time Pemmican

CAMBRIDGE, Mass., Oct. 21 (AP)—Dr. Robert S. Harris, Massachusetts Institute of Technology scientist, said yesterday that he had increased the energy content of the pemmican for Admiral Byrd's Antarctic explorers, and made it a far more palatable food than the Indians ever carried on the trail.

Dr. Harris said that he had developed a new formula, giving more calories per ounce of the concentrated ration. Three tons of the pemmican will be shipped for the admiral's Antarctic expedition. It has the further advantage, Dr. Harris said, of being pre-cooked and of having "a nicer flavor" than foods previously carried by explorers.

The caloric content was increased, the scientist explained, by using a higher ratio of fat in preparing the twenty-ingredient mixture from materials ranging from barley and beef to hydrogenated fat and onions.

Indians made pemmican by adding fats to dried meats of the buffalo and the caribou. Later, scientists developed pemmican foods containing beef, fats, sugar, cereals and vegetables.

"There's a lower ratio of vegetables in this ultra-modern pemmican," said Dr. Harris, Professor of Nutritional Bio-Chemistry at M. I. T., "but there will be no fear of vitamin deficiencies, because this expedition has taken advantage of the latest advances in nutritional science, one instance being the inclusion in their supplies of gelatin vitamin capsules."

A meal of pemmican may be quickly prepared while the explorers are on the ice far from their base camps by placing a cake of the preparation in melted snow, and warming the mixture just enough to make a gruel-like dish.

Pre-cooking of the ingredients, said Dr. Harris, would eliminate the need for carrying large supplies of cooking fuel on long trips.

"The pemmican tastes like roast beef," Dr. Harris said. He added that the nutritional requirements of the men on the trail were outlined for him by Dr. Paul Siple, one of the base leaders of the expedition and a veteran of two previous Byrd Antarctic explorations.

"Food with a high caloric content is important in the cold country," he said. "Those men require from 6,000 to 8,000 calories a day, as compared with the 2,000 to 3,000 we require. They have to keep the furnaces of their bodies burning harder to keep warm."

A LETTER

The following letter is published at the request of friends of Admiral Byrd:

Canterbury Court
1220 North State Parkway
Chicago
October 7, 1939

To Whom It May Concern:

An article concerning Admiral Richard E. Byrd written by a member of his first Antarctic expedition appeared in the October and November, 1934, issues of Real America, when I was editor of that magazine, and I supposed at that time the article was authentic and authoritative.

Subsequently, however, it became clear that the article was exaggerated and grossly unfair to Admiral Byrd.

I regret that I accepted this thing for my magazine and I want to offer my sincere, if belated, apology to Admiral Byrd for its publication.

(Signed) Edwin Baird

NEW ANTARCTIC MAPS

The United States Navy Department has up to the present issued to its ships no Antarctic Pilot or Anfarctic maps of its own other than that of Palmer Land issued in 1937. Its ships have carried the Pilot and maps issued by the British Admiralty.

The Hydrographic Office of the Navy Department has now begun to issue its own maps and will soon send out an Antarctic Pilot to accompany them. One of the new mercator maps (No 5412, price 60 cents), Pacific Ocean Antarctic Regions between latitudes 70° S and 80° S and longitudes 130° W. and 165° W on a scale of 1° of longitude equals 2.4 cm, was issued in September, 1938. The second sheet (No. 5411, price 60 cents) is dated November 1939. This is the Palmer Land section and covers the regions from 63° to 73° south latitude, and from 60° to 105° west longitude.

These two charts show the regions surrounding the West and East Bases, respectively, of The United States Antarctic Service. Remaining maps are in preparation.

A map of the Antarctic Regions is now in preparation by the Australian Government Bureau of Navigation under Captain John K. Davis, the famous Antarctic skipper. This map is expected to appear soon.

An historical map of the Antarctic sector between longitudes of 20° W and 110° E, has been printed in the Sept. 1939 number of the "Geographical Journal" in illustration of the paper by Mr. Lars Christensen on Recent Reconnaissance Flights in the Antarctic. This map is on a scale of 1:3,000,000 or about 50 statute miles to the inch.

—Prof. William H. Hobbs
Ann Arbor, Mich.

The 32 going to the West base of Antarctica:

Dr. Paul A. Siple, leader of the base and geographer; L. A. Warner, geologist; J. W. Perkins, biologist; E Lockhart, physiologist; R. Fitzimmons, physicist; M. Weiner, assistant physicist and dog driver; Roger Hawthorne, recorder; R. C. Frazier, medical officer; L. M. Berlin, surveyor; McCay, airplane pilot; Arthur Carroll, photographer; W. R. Giles, assistant pilot and radioman; Gray, airplane mechanic; Clay Bailey, radio; Reece, radio; J. Bursey, R. S. Moulton, M. C. Douglass, dog drivers; C. F. Passel, dog driver and assistant geologist; R. A. Butler, dog driver and geographer; V. D. Boyd, master mechanic; R. O'Connor, carpenter; L. Colombo, supply man; I. Schlossbach, navigator; H. Gilmour, recorder; S. Gutenko, cook; Asman Adam, tank driver; M. J. Lobell, L. Musselman and Malcolm Davis, biologists; K. Helm, photographer; Clarke, physicist.

The 29 who will go to the East base:

Richard Blackburn Black, field representative of the U. S. Department of the Interior in charge of the East base; P. H. Knowles, geologist; L. S. Sims, medical officer; J. G. Dyer, surveyor; Charles Shirley, photographer; E. B. Pierce, assistant pilot and radioman; E. L. Lampleigh, radio communication; Pullen, airplane mechanic; Odum, radio operator; Finn Ronne, engineer; H. F. Richardson, J. Healey and Curtis Leland, dog drivers; D. C. Hilton, dog driver and assistant surveyor; C. Sharbonneau, carpenter; A. Morency, tank driver; A. C. Hill, cook; R. Palmer, supply man; Herwil M. Bryant, biologist; Herbert Dorsey, meteorologist; C. Ecklund, biologist; C. Steele, tank driver; H. H. Richardson, dog driver; Z. Collier, mechanic; F. A. Wade, Ferranto, Dr. Thomas C. Poulter and Petro, snow cruiser; Dustin, fuel engineer.

BYRD CLAIMS ON LAND MEET FEDERAL CURBS

WASHINGTON, Nov. 10 (AP)—The State Department released today a statement of policy, applicable to the coming Antarctic expedition under Rear Admiral Byrd. It states that settlement of polar regions, and not merely discovery, is necessary for claims to soverignty. The policy was laid down 15 years ago by Secretary Hughes and officials say it has never been changed.

Contained in a diplomatic document in the foreign relations volumes of 1924, the policy means that the Byrd party must not merely discover new land to have it bear the Stars and Stripes, but that men must stay there for some years to come.

The Hughes' statement was made when Roald Amundsen was about to set out on an airplane expedition to the North Polar region. Norwegian Minister Bryn presented to the State Department a note saying:

"Possession of all the land that Mr. Amundsen may discover will, of course, be taken in the name of His Majesty the King of Norway."

But Mr. Hughes replied:

"Today, if an explorer is able to ascertain the existence of lands still unknown to civilization his act of so-called discovery, coupled with a formal taking of possession, would have no significance save as he might herald the advent of the settler: and where for climatic or other reaseons actual settlement would be an impossibility, as in the case of the polar regions, such conduct on his part would afford frail support for a reasonable claim of soverignty.

"I am therefore compelled to state, without adverting to other considerations, that this government cannot admit that such taking of possession as a discovery by Mr. Amundsen of areas explored by him could establish the basis of rights of sovereignty in the polar region."

AUSTRALIA REJECTS WILKINS PROPOSAL

Cites Expense and Navy Needs in Refusing Offer to Lead Antarctic Expedition

CANBERRA, Australia, Aug. 3.—The Commonwealth Government has declined Sir Hubert Wilkins's offer to lead an expedition to the Antarctic owing to the expense and also to the inability of the Defense Department to make available the naval personnel and the exploration vessel, Wyatt Earp, which is required as a munition carrier.

The government does not consider the proposed German expedition to the Antarctic threatens any interests over which Australia has sovereignty.

Sir Hubert Wilkins's plan for an Antarctic expedition involved cooperation with the forthcoming one of Rear Admiral Richard E. Byrd, whose next trip to Antarctica is being made with the help of the Federal Government. Sir Hubert had proposed to set up observation stations, each of which would have reported by radio and furnished long-range weather forecasts.

Sir Hubert had offered to equip and maintain privately a landing party of Australian naval men and scientists in the Australian sector of Antarctica, who would take advantage of the opportunity to cooperate with the Byrd Expedition, providing the Australian Government would transport the Wilkins men on the Wyatt Earp. He was prepared to spend from £12,500 to £15,000 of his own funds for equipping and maintaining bases.

Last month, in reply to a request from the Australian Government for further information as to his offer, Sir Hubert said that both the United States Department of State and Admiral Byrd had welcomed in the warmest terms the prospect of cooperating with the proposed Australian party.

Sir Hubert revealed that, in the past, he had discussed with Admiral Byrd the possibility of two such expeditions working together.

The Wyatt Earp, famous exploration vessel, passed from the ownership of Lincoln Ellsworth, American explorer, into that of the Australian Government last February. While Mr. Ellsworth owned her she traveled 78,000 miles in the course of four Polar expeditions. She was sold for about $17,600 and it was understood that the government planned to use her in coastal survey work and then send her to the Antarctic.

WHALES FEED ON SHRIMP

Diet of Baleen Type in Alaska Covered in New Report

Baleen whales taken off the coast of Alaska feed almost entirely on shrimp, according to a scientific report prepared for the International Bureau of Whaling Statistics by the Bureau of Fisheries and reported recently to Secretary of the Interior Harold L. Ickes by Acting Commissioner John R. Gardner. The report is required in accordance with the terms of the International Agreement for the Regulation of Whaling.

The stomach contents were taken from whales captured by the only licensed whaling company of the United States operating along the Alaskan coast. These huge mammals feed almost entirely on shrimp, principally euphausids, which are taken into the mouth in large quantities of water and strained through baleen, comblike whalebone, the water ejected and the shrimp swallowed.

Sperm whales, having teeth, are not dependent on this method of feeding and their diet is more varied. Stomach samples showed a variety of squid and octopus, fragmentary fish remains, skate egg cases, barnacles and hermit crabs in sea-snail shells. The crabs probably enter the whale's stomach in the stomachs of the fish consumed.

Chile to File Antarctic Claims

SANTIAGO, Chile, Oct. 3 (UP)—President Pedro Aguirre Cerda tonight appointed Dr. Julio Escudero, international law professor, to study and report to the government on Chilean rights in the Antarctic preparatory to filing this country's claims to South Polar areas.

John Rymill

South Australian wins medal for Antarctic research.

ADELAIDE, S. Australia—The United States Consul, Charles A. Hutchinson, has announced that John R. Rymill, the South Australian antarctic explorer, has been awarded the David Livingstone Centenary medal of the American Geographical Society.

This is in recognition of his work as leader and organizer of the British Grahamland expedition under the auspices of the Royal Geographical Society, the British Government, the committee of the Discovery and the Polar Institute. From January, 1935, to March, 1937, the Rymill expedition carried out extensive ground and aerial mapping work in Grahamland from a base on the Argentine Islands. Authorities have regarded these surveys as probably the largest and most accurate of the Antarctic Continent ever made.

Mr. Rymill is owner of a large sheep station at Penola, in the southeast of this State.

Japan's Whaling Fleet Grows; 6 Huge Ships in Antarctic Seas

WELLINGTON, New Zealand—Some 30 fleets from five countries are whaling in the Antarctic this year.

They come from the United States, Britain, Germany, Norway, and Japan and it is estimated that during the southern summer they will make a total bag of between 40,000 and 50,000 whales.

Special interest attaches to the operations of the Japanese.

Japan has been engaged in the Antractic whaling industry only since 1934 when the factory ship Antarctic Maru (later the Tonan Maru) came south with five chasers. On that voyage the Japanese employed Norwegian gunners and viewed the whole thing as an experiment. In 1935 the ship went south a second time, with five chasers and made a bag of 639 whales. She returned home with 7,400 tons of oil. In 1936 the Antarctic saw the first "whaling ships built in Japan, the factory ship Nisshin Maru and eight chasers. The Nisshin Maru has a capacity for 21,000 tons of oil and cost $2,500,000.

With whale oil at $105 per ton, the Japanese did well in 1936. The Tonan Maru took back 10,800 tons of oil, the Nisshin Maru 15,500 tons, a total "catch" worth more than $2,750,000. So in 1937 new fleets were added to the total. The Union Fishing Corporation, owners of the Tonan Maru, sent out a second fleet headed by Tonan Maru II which had a capacity of over 20,000 tons; the Great Ocean Corporation, which owned the Nisshin Maru, sent out Nisshin Maru II, a sister ship to the other giant. Whale oil fell to $60 a ton that year, but despite this the Japanese vessels earned enough to return their owners a good profit and so this year the Tonan Maru III has arrived here, along with the earlier ships, the Kyokuyo Whaling Corporation has sent south the Kyokuyo Maru, and there are six factory ships and nearly 50 chasers, where four years ago there was but one ship.

The rise in shipbuilding costs in the interval has been so marked that it is estimated the new factory ships which make their maiden voyage south this summer have cost around $4,500,000 each. Both are attended by eight or nine chasers costing $150,000 each, so the value of Japan's Antarctic whaling fleet is now considerable.

The first of the Japanese fleets south this year was that of the Nisshin Maru. She arrived at the whaling grounds, west of here, at the end of October. The Tonan Maru I came next, a few days later The six Japanese factory ships in Antarctic waters this summer carry 2,650 men.

Some of the oil won by these fleets will be sent to Europe by tankers which will meet the factory ships during the season and take over their "catch." This year, however, the Japanese are expected to concentrate more highly on by-products; whale hides will be kept, as a method of treating them and making them approximate leather is reported to have been adopted in Japan; there will be storage of the red meat from the whale's back which is described by some as "nourishing and tasty" and there is even a report that blubber may be used to make synthetic wool, the Germans having discovered a process which makes this possible.

To lift the hides, meat, and other by-products, two transports will go from Japan to the Antarctic. Additional supplies will be freighted home by the factory ships.

WHALE TWINS DISCOVERED

Three Unborn Sets Found in Blue and Finback Species

Three sets of twins—a rare event in the family life of the whale—were found in the catch of United States whaling vessels during the last reported season and the Antarctic season of 1938-39, it was reported recently to Secretary of the Interior Harold L. Ickes by Acting Commissioner John R. Gardner of the Bureau of Fisheries.

Four of the twins, unborn, were discovered in two finback whales, while the other pair was found in a blue whale, the report points out. In the finback whales, the twins were of the same size, but in the blue whale there was a one-foot difference in size.

Bureau of Fisheries experts explained that only on extremely infrequent occasions does the sea-going stork carry a double burden to the whales, although two sets of twins were found in the catch of American vessels during a prior season. Besides the twins, two ninety-six-foot whales were harpooned in the Antarctic by the United States vessels during the 1938-39 season.

Scarcity of whales together with more stringent restrictions on whaling caused a decrease in the catch during the 1938-39 period, the United States vessels capturing 2,204 whales as compared with 5,198 taken during the previous season, it was reported.

Sledge, Museum Piece, Hauls Food in Blizzard

DUNEDIN, N. Z., July 26 (AP).—A sledge that has been in a museum for twenty-six years was used today to carry food to a radio station isolated by the worst snowstorm in Dunedin's history. The rescuers got within a quarter of a mile of the station, on a hill above the city, and were met by the station staff.

Capt. Robert Falcon Scott originally used the sledge on an expedition to the South Pole.

CAPTAIN BOB BACK WITH ARCTIC PRIZES

Baby Musk Oxen and Other Specimens Are Brought From 10,000-Mile Voyage

Sept. 14

Captain Robert Bartlett, veteran explorer, arrived in New York yesterday afternoon from his fourteenth annual trip to the Arctic. The famous old Gloucester fishing schooner Effie M. Morrissey, which has carried Captain Bob on every one of his expeditions, docked at McWilliam Shipyard, on the Kill Van Kull, at West Brighton, S. I., after a ten days' run from Brigus, Nfld., the home of the explorer.

The Morrissey brought back four baby musk oxen, two male and two female, for the Bronx Zoo. They were captured on the northeastern coast of Greenland. The oxen, less than six months old, were named Blair, Fair, Lelia and Madge by Captain Bob soon after having been taken aboard the Morrissey. They were housed in a big crate amidships aboard the schooner on the homeward trip.

The schooner also brought back starfish, codfish crabs and many other specimens taken from the bottom of Cape Farewell for Dr. Waldo Schmidt of the Smithsonian Institution at Washington and a collection of birds, including barnacle geese, pink-footed geese, old squaw ducks, red-throated loons, little auks and other birds captured on the northeastern coast of Greenland for Dr. J. L. Cleveland of the New England Museum of Natural History.

During the trip Captain Bartlett sent reports on ice and weather conditions to the hydrographic office in Washington. The Morrissey left Staten Island on June 26 and traveled 10,000 miles. The first stop was at Brigus, where Captain Bartlett and his brother William, first mate of the schooner, spent several days with their mother, who is 87 years old.

The Morrissey headed then for Greenland and got within sight of Shannon Island, 700 miles from the North Pole, when ice floes prevented going further.

MacMillan's Party Back From 18th Arctic Cruise

BOOTHBAY HARBOR, Me., Sept. 9 (AP).—Ending his eighteenth Arctic expedition, a 6,000-mile exploratory and scientific cruise into the northern wastelands, Comdr. Donald B. MacMillan guided the schooner Bowdoin into this port today with its crew of nine collegians and Mrs. MacMillan.

The expedition, which left here June 24, included in its itinerary Nova Scotia, Labrador, Baffin Land, Greenland, and points 300 miles above the Arctic Circle.

Because of floating ice, MacMillan said the expedition was unable to reach large, fast-moving glaciers near Great Disco Bay, a study of which had been one of the major objectives of the cruise. However, he said Umanako Glacier, off northwestern Greenland, was successfully measured and was found to move fifteen feet a day southward.

NO WALRUS FOR ESKIMOS

Barrow Group Must Substitute Polar Bear for Delicacy

BARROW, Alaska, Nov. 22 (AP)—Eskimos of this farthest north outpost had no juicy walrus meat nor even an abundance of the usually plentiful whale or seal meat in their ice cellars today as they prepared for Thanksgiving Day fare on freshly killed polar bear.

Up here, where turkey is unknown, the Eskimos ask nothing better for a holiday feast than walrus meat. But strong offshore winds drove the ice from the northern beach and robbed the Eskimos of their hunting on the ice for walrus during the Summer and early Fall.

Even the reindeer supply has dwindled to less than half what it was three years ago. Numerous wolf packs rival the natives in the food quest by killing off twenty to thirty reindeer on almost nightly raids. Several Barrow families have moved inland to follow caribou herds or to seek fish in rivers and lakes until the return of normal hunting in this region.

Adding to the dark picture in the Barrow settlement was the disappearance yesterday of the sun, which will not shine again in this "land of the midnight sun" until Jan. 21.

ESKIMOS AND INDIANS INCREASE IN CANADA

Government Improves Health of Natives with Church Aid

OTTAWA (Science Service).—The native population of Canada's western Arctic is slowly but steadily increasing, according to the Department of Mines and Resources here. The general health of the Eskimos and Indians is good, and departmental doctors, stationed at the principal centers of population, report that mortality, particularly in infants, has been reduced largely as a result of the medical assistance and educational facilities provided by the government in cooperation with religious organizations.

Canada's most northerly doctor is stationed at Aklavik, more than 100 miles north of the Arctic Circle. At Aklavik schools and hospitals are operated by the Anglican and Roman Catholic missions. In this region, around the mouth of the Mackenzie River, live most of the Indians, Eskimos and whites of the western Arctic.

To visit all the settlements the doctor travels annually 1,800 miles by dog team in winter, about the same distance in summer by motor-powered schooner. For emergency cases he uses an airplane. The two hospitals operated by the two churches can handle eighty patients at a time, are electrically lighted, equipped with modern operating and dental rooms, have X-ray equipment, and isolation wards. The two church boarding schools for native children can accommodate 180 pupils. The children are taught handicrafts, physical and health education, in addition to the usual reading, writing and arithmetic.

The Canadian Government has set aside large native trapping areas, has imported reindeer, and is doing everything possible to keep the natives happy, intelligent and industrious.

PRIBILOF REPORTS RECORD SEAL CATCH

Islands in North Pacific Take 60,473 Skins, an Increase of 2,109 During 1938

The largest supply of Pribilof Island fur-seal skins in a half-century was taken this season, it was reported recently to Secretary of the Interior Harold L. Ickes by Acting Commissioner Charles E. Jackson of the Bureau of Fisheries.

With telegraphic reports indicating a total take of 60,473 skins, the figures represent an increase of 2,109 over the number obtained in 1938. Including 47,646 skins from St. Paul Island and 12,827 from St. George Island, this season's take is the largest for any year since 1889.

Under the terms of the fur seal treaty of 1911, the Dominion of Canada and Japan each receive 15 per cent of the annual take of fur seal skins taken at the Pribilof Islands. The respective shares are received either in actual allotment of skins or in due proportion of the net proceeds after the skins are sold at public auction in this country.

Before the seal skins are sold for the account of the government they are dressed, dyed, machined and finished by a fur company of St. Louis under contract with the Department of the Interior.

Despite the record-breaking catch, the Bureau of Fisheries points out that international cooperation in the conservation of this natural resource has resulted in an increase in the size of the fur seal herd that breeds on the Pribilof Islands from less than 125,000 in 1911 to nearly 2,000,000 at the present time. Since 1911 it is estimated that 887,629 fur seal skins have been taken, including this year's supply.

At the time the United States purchased the territory from Russia in 1867 it is estimated that the Alaska fur-seal herd contained from 1,000,000 to 3,000,000 animals. Prior to 1911, however, rapid reduction in the herd was brought about primarily by indiscriminate killing of the seals on the high seas.

As a consequence, a treaty was entered into that year by Great Britain, Japan, Russia and the United States, whereby the killing of seals in the waters of the North Pacific was prohibited, except for restricted hunting by natives.

Efficacy of this conservation move is evidenced in the report which shows that the herd now has been increased to approximately 2,000,000 seals at the present time.

ARCTIC DIARY ILLEGIBLE

Record of De Long Found by Soviet Party Is Indecipherable

MOSCOW, July 30.—The diary of Lieut. Comdr. George Washington De Long, leader of the Arctic expedition of 1879-81, has proved to be completely indecipherable, it was disclosed here today. The diary was found last year.

The diary of Lieut. Comdr George Washington De Long, containing a record of the Arctic expedition of 1879-81, on which he and most of his party perished, was found in June, 1938, on Henrietta Island in the Arctic Circle by L. F. Mukhanoff, head of a Soviet scientific party. It was brought in October, 1938, to Leningrad, where experts of the Arctic Institute began attempts to decipher it.

The diary was in the copper cylinder in which Lieutenant George W. Melville, a member of the De Long group, placed it under a rock cairn before he continued to Siberia, where he was rescued. The cylinder had not been sealed properly, however, and water had entered and reduced the diary to a pulp. The same expedition also discovered a flagstaff that Commander De Long had left flying the American flag.

REINDEER ENTERPRISE THRIVES IN CANADA

Official Jurisdiction of Wildlife Shows Seasonal Progress

Canada's reindeer enterprise continues to make satisfactory progress, according to reports received by the Department of Mines and Resources, Ottawa, from the Reindeer Station in the Mackenzie Delta area, Northwest Territories. With the completion of another successful season on the inland Winter range, the main government herd, now comprising about 3,500 head, was moved during the last week of March to the selected fawning grounds on Richards Island, a short distance off the Arctic coast.

In addition to providing a well-protected area for the fawning, which usually starts in April and continues into June, Richards Island produces an excellent growth of grasses, shrubs and sedges which form the Summer diet of the reindeer. The island has been used as a Summer range since 1936, and is the scene of the annual round-up in midsummer when the deer are put through the corrals and counted.

The smaller herd of about 900 deer, which was separated from the main herd last December and established in the Anderson River area under native management, also passed the Winter in excellent condition. These animals have been brought to the coast area for the fawning season and Summer grazing, and are at present located near the mouth of the Anderson River in the vicinity of Nicholson Island. The natives entrusted with this herd are under the direct supervision of the chief government herder.

ARCTIC DEFENSE ADVISED

Canadian Pilot Sees Long-Range Flying as Invasion Threat

WINNIPEG (AP).—With the rapid development of long-range aviation, Canada must begin to worry about defense of its Arctic shoreline, says Walter E. Gilbert, veteran Northern flier.

He points out that on air routes running over the top of the world, Canada is only 2,500 miles from North Central Europe and 1,500 miles from Greenland.

"Canada might well give major consideration to the unfortified border of the Canadian Arctic," he said in an address here.

GRIPPED TWO YEARS IN ICE OF THE ARCTIC

Soviet Vessel Sedoff Has Drifted to About 300 Miles From the Pole

MOSCOW, Oct. 22—The ice-breaker Syedofff will have been drifting in the ice of the Central Polar Basin for two years tomorrow. It was on Oct. 23, 1937, that the ship failed to break through the ice off the eastern end of Belkoff Island and in Lat. 75 degrees 21 minutes N., and Long. 132 degrees 15 minutes E., became frozen up and began the long drift.

During the drift the ship has traveled 2,750 miles and is now moving southwest, lying northeast of Spitzbergen. During the first year the Syedoff drifted 1,100 miles, including 520 miles in a northerly direction second year 1,390 miles of which 100 miles were in a generally westerly direction.

It is believed that the enormous amount of scientific material collected will prove of great value. Five hundred astronomic, 127 magnetic and thirteen diurnal observations have been made. Every two hours meteorological observations are taken which are transmitted to shore every six hours.

MOSCOW, Oct. 17—By the end of October the ice-breaker Syedoff will have been drifting in Arctic seas for two years.

The latest message received here by the chief of the Adminstration of the Northern Sea Route from Captain Badigin, commanding the Syedoff, reported that on Oct. 2 the ship had reached Lat. 84 degrees 57 minutes N., Long. 28 degrees 55 minutes E. In the vicinity of the Syedoff the depth of the seas measured was found to be more than 14,000 feet.

July 18

MOSCOW (AP).—For more than nineteen months Captain K. S. Badigan has been skipper of an imprisoned ship, the Soviet Russian ice-breaker Sedoff, which was caught in the clutches of Arctic ice Oct. 23, 1937, and has drifted since with the ice through two polar nights.

The Sedoff, still ice-bound, has drifted beyond Lat. 86 degrees N.—only about 300 miles from the North Pole—the farthest north ever reached by any ship.

Captain Badigan has written an account of the scientific observations that have kept his men busy during their long meandering—and are likely to keep them busy for months to come. Here are a few excerpts from his story, published in the Communist party newspaper Pravda:

"Our chief task was to study the nature of the drift and its laws. We therefore adopted all means to insure utmost accuracy and thoroughness of observations.

335 Astronomical Recordings

"Since last September 335 astronomical recordings of the ship's position and nearly 2,100 meteorological observations have been made. These observations enabled us to trace the drift with greatest exactitude.

"Observations of the condition of the ice are recorded regularly every four hours. Every ten days the thickness of the 1936-37-38 ice formation is measured. The rotary movement of the ice is registered daily.

"We already have drawn certain conclusions as to the nature of the ice movement. For instance, it has been established that during the first period of drift the ice had no definite rotary movement and the ship's course remained almost unchanged. Now, when the movement toward the west has been intensified, a 12-degree counter-clockwise turn has been observed. This turn of the ice, and the formation on April 9 of an unusual fissure attaining a width of 2,000 meters (6,561.6 feet) and extending far beyond the bounds of visibility, indicate a certain rarification of the ice surrounding the Sedoff.

"It is highly probable that these phenomena are to be explained by the fact that we are approaching the strong current which carries the ice from the Arctic Sea.

"Meteorological observations are another important object of our exploration. They are taken at intervals of two hours. We send 'meteograms' to the continent four times daily as material for the compilation of synoptic weather charts.

"Hydrological observations, depth soundings and the collection of soil samples from the sea-bottom also play an important role in the scientific activity of the Sedoff. Numerous deep-water hydrological soundings made in the course of our drift demonstrate the existence of a great layer of warm Atlantic water in the depths of the ocean.

19,685-Foot Cable for Soundings

"For regular soundings of the ocean we prepared a 6,000 meter (19,685-foot) cable, a device for collecting samples of the soil and an electric winch. The first attempts at soundings were failures: 8,000 meters (26,246 feet) of cable and several instruments which had cost much effort to make were lost overboard.

"A systematic study of the magnetic field in unexplored regions of the Arctic Ocean also is being made. Magnetic storms have been observed frequently during the drifts—a particularly strong one on April 10, when the amplitude of oscillations of magnetic declination reached 52 degrees 12 minutes.

"What are our plans for the future? How will the drift of the Sedoff continue? Probably at the end of this year's navigation season, we shall reach 50 or 60 degrees East Longitude and 85 or 86 degrees North Latitude.

"A considerable rarification of the ice may be expected in that region. The splendid work of the ice-breaker Yermak last year made it possible to escort the Sadko and Malygin (which were caught in the ice with the Sedoff in 1937) out of the ice. It may be, therefore, that a ship like the Yermak will be able to take the Sedoff out, if such an attempt should be made."

Soviet Flier Paints Sea Red and Green—Actually

MOSCOW, June 5.—The Northern Sea Route Administration has thought up another trick to play on the Arctic regions. It was learned by telephone from Archangel today that Mikhail Vodopyanoff, premier of the Soviet polar fliers, has just arrived there after having painted the Kara Sea red—and green. Literally.

Aviator Vodopyanoff has just completed a survey flight over the Kara Sea studying ice conditions, flying most of the time at an altitude of only 300 feet and rising at times to 3,000. By means of a special apparatus filled with red paint, he dropped a long, wide scarlet band on the ice stretching east to west about sixty miles from Novaya Zemlya in the Arctic Ocean. Then, returning to Amderma and, after refilling his reservoir with green paint, he drew a wide green line from north to south about fifteen miles from the Yamalsky Peninsula.

Other Soviet aviators will fly over these painted stretches of ice from time to time and be able to give the speed and the direction of drift and add to the encyclopedic data on Arctic currents that Soviet scientists are accumulating.

PRAISE FOR STEFANSSON

Russian Explorers Cable Birthday Congratulations to Him

MOSCOW, Nov. 21.—The Soviet Arctic explorers Ivan Papanin, Pyotor Shirshoff, Ernest Krenkel and Eugene Federoff cabled congratulations to Vilhjalmur Stefansson, Arctic explorer now living in New York, on his "glorious sixtieth birthday," it was revealed here today. The message said:

"More than half of your life has been selflessly devoted to study of the Arctic. All Soviet polar workers honor your noble scientific activity and experience in practical work in the Arctic and sincerely wish you a long life of fruitful work for the benefit of science."

Mr. Stefansson's reply as quoted here said:

"I attach double value to your kind congratulations, coming from the country that is foremost in polar exploration and from its foremost group of explorers."

Lifting Arctic Veils

Moscow is holding an exhibition of Arctic findings in the All-Union Scientific Research Institute of Fishing Industry. The collections on view are those made by P. Shirshov during the famous nine-month drift of four Soviet scientists from the Pole southward.

Prior to this expedition scientists had little knowledge of the character of the bottom of the Arctic Ocean. The Moscow exhibits establish the fact that the bottom of the central part of the Arctic basin is covered with brown, gray and pinkish silt, found only at great depths, and that in this silt there is an enormous diversity of animal and plant life. Tiny crustacea supposed to inhabit only the Mediterranean, live in the plankton of the North Pole area. So with crustacea hitherto found only in the Pacific. Some specimens in the collection have not as yet been identified.

No Land or Shallow Water

During his stay on the drifting ice floe Shirshov made thirty-three depth soundings exceeding a mile and a quarter. They showed that there is neither land nor shallow water in the Arctic, contrary to the old suppositions. The greatest depth of the ocean is two and three-quarter miles.

Shirshov found that from the surface to the depth of 650 feet, the temperature of the water is below freezing, and from 650 to 1,400 feet it rises to 1.7 degree centigrade. This warm water originates in the Gulf stream. Beginning with 1,400 feet down to the very bottom, the temperature again falls gradually. The salt content in the water also depends on the depth. The saltiest water was found at depths of 650 to 1,400 feet.

FROZEN 20,000 YEARS, PLANTS ARE REVIVED

Russians Report Success With Organisms in Arctic Soil

MOSCOW, June 26 (AP).—Tass, the official Russian news agency, reported today that living organisms dating back 20,000 years had been revived by Soviet scientists after a long sleep in frozen soil.

Species of water plants and fungi and soil bacteria were found in the frozen soil strata of Eastern Siberia near the bones of extinct mammoth bison.

Soviet scientists, using nature's refrigerator in the Arctic for their experiments, have been seeking to locate the boundary between life and death for many years. In September, 1936, they were successful in reviving plant organisms calculated to have been frozen solid from 1,000 to 3,000 years in the land of perpetual ice.

The All-Union Academy of Sciences then undertook experiments to revive "dead" organisms of even greater antiquity.

The region north of the Arctic Circle provides an ideal workshop, since the scientists need dig down but a few yards to strike the zone of perpetual ice, which is from 165 to 200 feet thick. In this frozen belt nature has stored for centuries both plant and animal organisms which may be dead or in a state of suspension.

Wilkins' Trip Off

Minneapolis, Oct. 27 (U.P.).—Sir Hubert Wilkins, explorer, announced today that because of the war he had abandoned his second proposed attempt to reach the North Pole by submarine under the ice pack.

FRANK WILD DIES; POLAR EXPLORER

Accompanied Scott, Mawson and Shackleton on Voyages to Antarctic Continent

JOHANNESBURG, South Africa, Aug. 20.—Commander Frank Wild, South Polar explorer, died today in Klerksdorp, Transvaal, of pneumonia. His age was 65.

Commander Wild took part in more Antarctic expeditions than any other explorer, not excepting even Shackleton. He was a member of every expedition in which Snackleton went South and in addition was a member of the Australian Antarctic expedition under Sir Douglas Mawson in 1911 and of Captain Robert F. Scott's expedition in 1901.

On Shackleton's sudden death in South Georgia Ireland, in January, 1922, Wild assumed command of the ship Quest and continued the voyage to the Antarctic regions. Since 1922 he had lived in South Africa.

Received Livingstone Medal

When Sir Douglas Mawson was preparing in 1929 to explore the Antarctic, THE NEW YORK TIMES editorially credited Commander Wild, his assistant, with having had more experience in that cold and unknown region than any other living man. He was then 54 years old and had been exploring, in one capacity or another, since 1889.

The general public had not known much about him. But five years previously the American Geographical Society, then headed by Dr. Isaiah Bowman, had presented to him the David Livingstone Centenary Medal for his work in the Antarctic with Scott, Shackleton and Mawson. The society honored him for his contributions to geography during his long service in the frozen wastes.

His outstanding adventure was with Shackleton in 1916. In that year he commanded twenty-two beleaguered men who were left on Elephant Island on April 16, the day Shackleton started his famous journey of 750 miles in an open boat with six comrades to South Georgia Island for help.

On a narrow shelf of beach Wild and his men, hemmed in by a glacier on one side and by the angry sea on the other, lived for more than four months in a hut eighteen feet by nine, and five feet high at its tallest point. Until they were rescued on Aug. 20, they subsisted on one meal a day—a grim dinner of penguin flesh fried in blubber.

Explored Australia When 25

Commander Wild was born at Skelton, Yorkshire, England, in 1874. He made his first exploratory journey, to little-known parts of Australia, when he was 25 years old. From that time on until the late Nineteen Twenties he was continually afloat on adventurous searches.

An adept navigator, in 1901 he went to the Antarctic with Captain Scott as second in command of the expedition. Scott's party, which had sailed south in the Adventurer, reached the South Pole only to find the Norwegian flag there, where it had been placed by Amundsen.

Wild became associated with Sir Ernest Shackleton in 1907 and was with him during that explorer's adventures of that and the next two years. He was with Shackleton again in 1923, and wrote a book entitled "Shackleton's last Voyage."

In 1924 Commander Wild received the patron's medal of the Royal Geographic Society.

He was a member of the Ends of Earth Club in New York.

Comdr. Frank Wild

CAPT. RIESENBERG, EXPLORER, IS DEAD

BRONXVILLE, N. Y., Sunday, Nov. 19—Felix Riesenberg, engineer, master mariner and author of sea tales, died early today in Lawrence Hospital here after a heart attack. He was 60 years old.

Mr. Riesenberg was born in Milwaukee, the son of William and Emily Schorb Riesenberg and was educated at the public schools and at sea. From 1896 to 1907, he made voyages, both in sail and steam, to many parts of the world, both as a merchant sailor and for two years, 1901 and 1902, as an officer of the United States Coast and Goedetic Survey.

In 1906 he was a member of the Wellman Polar expedition, Wintering at Dane's Island, Spitzbergen, in charge of the explorers' camp. He was the navigator of the airship America in the first attempt to reach the North Pole by dirigible balloon in Sept., 1907.

ROBERT MARSHALL

WASHINGTON, Nov. 11—Robert Marshall, chief of the division of recreation in the Forestry Service, died today on a train on his way here from New York. His age was 37. Mr. Marshall, who was considered one of the most brilliant of the younger officials in the government service, was a son of the late Louis Marshall, noted New York lawyer, and Mrs. Marshall.

Mr. Marshall was graduated from Syracuse University, where he studied forestry. He afterward obtained the degree of Doctor of Philosophy from Johns Hopkins University. He came to Washington in 1931, after having spent fifteen months above the Arctic Circle in the Alaskan village of Wiseman. As a result of his experience there he wrote "Arctic Village."

Dillon Wallace

Penetrated Labrador Wilds for 25 Years After Giving Up the Practice of Law

BEACON, N. Y., Sept. 28.—Dillon Wallace, who explored the unmapped wilds of Labrador more than twenty-five years ago and then wrote many books and novels dealing with Arctic life, died today after a long illness at his home here. He was seventy-six years old.

Mr. Wallace participated in three exploring expeditions into the interior of Labrador, returning each time long after friends and relatives had given him up for lost. His first Arctic trip was in 1903 on an expedition led by Leonidas Hubbard jr. Hubbard died of exhaustion on the trail and Mr. Wallace was near death many times before he succeeded in finding his way back to a trading post with his leader's body.

He returned to Labrador in 1905 as leader of another exploring party. This time he was unheard from for eleven months as he wandered through uncharted wilds and finally reached New York to find that his obituary had already been printed by newspapers.

Mr. Wallace had a successful law practice in New York City when in 1903, at the age of forty, he succumbed to Hubbard's persuasiveness and accepted Arctic exploring as an avocation. His first book, "The Lure of the Labrador Wild," published in 1905, attracted many readers at a time when the world's attention was centered on attempts to reach the North Pole. Succeeding books were equally successful, and he gave up his law practice in 1918 to devote all his time to writing.

WILLIAM T. LOPP, 74, EDUCATOR IN ALASKA

Chief of U. S. Bureau 15 Years Expanded Reindeer Industry

SEATTLE, April 11 (AP).—William Thomas Lopp, chief of the Alaska division of the Federal Bureau of Education for fifteen years and credited with building the Territory's reindeer industry, died yesterday at the age of 74.

In his early twenties Mr. Lopp was a school principal in Indiana, and he was 26 years old when he first went to Alaska as a missionary teacher at Cape Prince of Wales. In 1893 he was appointed superintendent of the United States Teller Reindeer Station at Port Clarence and for some years thereafter he performed the duties of missionary teacher and reindeer superintendent.

Mr. Lopp had charge of the deer herd in the Point Barrow relief expedition of Captain Jarvis, 1897-98. One of the notable exploits of the former Indiana school principal was the driving, with the aid of seven Eskimos, of a herd of 400 reindeer from Cape Prince of Wales to Point Barrow, 750 miles across the treacherous ice of Kotzebue Sound. He originated the "endless-chain" plan of distribution which led to Alaskan natives owning more than 600,000 reindeer, valued at $2,000,000.

G. A. THORNE JR. DIES IN AIRPLANE CRASH

Member of Byrd Antarctic Force in 1929 Is Trapped in Burning Wreck

HARRISVILLE, N. H., Sept. 7 (AP).—George A. Thorne Jr., 37, of Chicago, a member of Rear Admiral Byrd's first expedition to the Antarctic, was killed late today when his Stimson airplane crashed into woodland near his Summer home.

The plane burst into flames, setting fire to the woods. Rescuers had difficulty extricating Thorne's charred body.

Winslow E. Melvin, transportation director of the New Hampshire Public Service Commission, and Horton L. Chandler, inspector, said they were unable to discover the cause of the crash.

A member of Thorne's family said that the aviator, who took off from the Keene airport, had planned to be a member of Admiral Byrd's expedition to the Antarctic this Fall.

Mr. Thorne had a home in New York City. He leaves his mother, a brother and four sisters.

Mr. Thorne, son of Mrs. George A. Thorne of Chicago, was a surveyor and dog-team driver with the Byrd Expedition. While in the Antarctic in 1929 he drove a dog team 1,500 miles to establish an emergency base 300 miles from the South Pole for Admiral Byrd's flight over the Pole.

While on the trip Mr. Thorne and his associates made a geological survey of 167 square miles of territory and discovered a previously unrecorded mountain range.

Mr. Thorne originally joined the Byrd Expedition as a seaman. His father, son of the co-founder of Montgomery Ward & Co., died in 1928.

The youngest Thorne attended Yale University, where his work in forestry and his skill as a ski jumper familiar with snow conditions equipped him for his work with the Antarctic expedition. As an undergraduate he was also an aviation enthusiast and owned several planes.

Since his return from the Antarctic he had been interested in several other explorative expeditions, including a project backed by the American Geographical Society, the American Museum of Natural History and the New York Botanical Society, for the exploration by airplane of unknown areas in Southern Venezuela. The expedition was later cancelled.

In 1932 he and John P. Porter and Ralph N. Isham, Chicago sportsmen, flew to Canada and Alaska on a fishing trip.

MoskovskyDies in SovietCrash

MOSCOW, July 26 (AP).—Yakov Moskovsky, thirty-four years old, director of the sports aviation section of the Soviet Civil Defense Organization, was killed in an accident today. In 1936 he participated in the Soviet North Pole expedition. The communique announcing his death said only that he was "killed in the performance of duty."

THE WILKES EXPLORING EXPEDITION

By CAPTAIN G. S. BRYAN, *U. S. Navy*

THE closing months of 1939 and early 1940 mark the one hundredth anniversary of the crowning achievement of the United States Exploring Expedition, or the Wilkes Exploring Expedition as it was later called. The accomplishments of this expedition under the command of Lieutenant Charles Wilkes, U. S. Navy, stand perhaps as the greatest achievement in the field of exploration that this country has ever known.

In its almost ceaseless wandering for nearly 4 years, this expedition circumnavigated the globe, investigating numerous dangers reported to exist, surveying still more numerous lands, discovering many new lands, and proving the nonexistence of others. Voluminous data were collected at each place visited which added greatly to the scientific knowledge of the day; and the various surveys, weather observations, and other hydrographic data collected greatly increased the store of maritime knowledge then existent.

The most notable accomplishment was the discovery of the existence of an Antarctic Continent. Although one or two short stretches of this continent had been sighted shortly before, it remained for the Wilkes Expedition to develop its extent by skirting the coast for over 1,500 miles, sighting land with sufficient regularity to demonstrate beyond doubt that this was a continuous coast line, and not that of a number of isolated islands.

Five large volumes, afterwards written by Wilkes, which comprise the narrative of this expedition, constitute a modern odyssey which entitles the expedition and its leader to a niche in the Hall of Fame along with Columbus, Cook, Magellan, and other better-known explorers. Unfortunately, however, neither the expedition nor its intrepid leader has ever received the prominence and publicity to which they are entitled. Perhaps the centennial of his voyage may have served to awaken interest in this subject and to correct injustice and neglect.

The whaling industry, then in its heyday, appears to have supplied the principal motive for this expedition, although the Act of Congress authorized it for "the safe-guarding of American whale-fisheries, the promotion of commerce, and the safety of future navigation with the extension of scientific knowledge in general." For some reason the proposal to authorize the expedition provoked a bitter debate in Congress. Two years of bickering occurred before the bill was passed in May, 1836.

The wrangling in Congress was only a forerunner, however, of what was still to come. Political interference and faulty organization and administration not only delayed, but cast doubt and ridicule on the expedition. At least three officers were successively placed in command and afterwards resigned. Almost two years passed and still little progress had been made on the project. At this time, March, 1838, the Secretary of the Navy placed Lieutenant Charles Wilkes in charge of the expedition and instructed him to organize it anew.

Born in New York, April 3, 1798, Lieutenant Wilkes had entered the merchant service when 17 years of age, and was appointed a midshipman in the Navy two years later. His record, prior to the expedition, included cruises in the Pacific Ocean and the Mediterranean in addition to some notable surveying duty. In 1833, he was appointed as Head of the Depot of Charts and Instruments, the forerunner of the present Hydrographic Office and Naval Observatory. By this time he had acquired a reputation as a navigator and scientist which well qualified him for the work in question. He has the distinction of being the first in the United States to set up fixed astronomical instruments and observe with them.

As regards his personal characteristics, he was a man of indomitable fearlessness and courage but possessed of a fiery temper and rash impetuosity which often got him into trouble. He has been referred to as the stormy petrel of the Navy. These traits of character were very much in evidence in the Trent Affair, years later during the Civil War, when Wilkes, then in command of the *San Jacinto*, seized the Confederate Commissioners, Mason and Slidell, from a British ship, almost causing a war with that country.

In keeping with his reputation as a man of action, Wilkes immediately plunged into the work of reorganization which had baffled his predecessors. Political interference still continued, and objections were made to having an officer of such junior rank in command, but this failed to deter him in the work of organizing and equipping the expedition. The reduction in the number of vessels, which it was decided at this time to send on the cruise, was an added handicap.

No expense had been spared in purchasing the best instruments obtainable. Wilkes himself had selected most of them while in Europe before he was ordered in command. One item consisted of 29 chronometers.

These vessels made up the expedition:

Vincennes, Flagship	sloop of war	780 tons
Peacock	sloop of war	650 tons
Porpoise	brig	230 tons
Relief	store ship	

Later two tenders, the *Sea Gull* and the *Flying-Fish*, were added. These were former New York pilot boats of 110 and 96 tons, respectively.

In addition to the regular naval complement of officers and men, a staff of civilian scientists were carried on the *Vincennes* and *Peacock*. These included three naturalists, two botanists, a mineralogist, a philologist, a taxidermist, and two draftsmen. The collection of data on hydrography, geography, astronomy, terrestrial magnetism and meteorology was assigned to the naval personnel.

Wilkes was under no illusions as to the condition of the ships assigned him. They were ill-equipped for making a sustained cruise of this proportion and the crews were quite restive. A letter had been forwarded to the Secretary of the Navy in which they had set forth their discontent and objection to having a new and younger set of officers placed over them. After the multitudinous delays which had occurred, however, Wilkes decided that the best policy was to set sail as early as possible and accordingly early in July the squadron assembled at their rendezvous at Hampton Roads.

On July 26, 1838, President Van Buren, accompanied by Secretary of the Navy Paulding and Secretary of War Poinsett, reviewed the tiny squadron. This occasion apparently added considerably to the morale of the expedition. August 10 was set as the date of readiness although few thought it could be met. Wilkes was adamant, however, and in view of previous exasperating delays, he determined to report ready on that date regardless of whether or not the ships were completely equipped. The date was met.

The letter of instructions from the Secretary of the Navy dated August 11, 1838, is a rather interesting document. It outlined the general purpose and course of the expedition, listed the many countries and islands to be visited and the numerous reported shoals that were to be investigated and their exact location established or proved nonexistent. It directed that the Southern Ocean be ex-

CHART OF THE WORLD MADE BY WILKES AND PUBLISHED IN THE ATLAS OF THE U. S. EXPLORING EXPEDITION, SHOWING TRACKS OF SHIPS OF THE EXPEDITION

plored and surveyed, that the existence of all doubtful islands be checked, and laid down a general code for dealing with natives of countries or islands visited. He wrote:

> The expedition is not for conquest but discovery. Its objects are all peaceful. They are to extend the empire of Commerce and Science; to diminish the hazards of the Ocean and point out to future navigators a course by which they may avoid dangers and find safety.

Among the minor points of interest was the admonition "to teach the natives the modes of cultivation and to encourage them to raise hogs in greater abundance." Also of interest was the strict injunction that no information was to be given out regarding the cruise prior to its publication officially.

With these orders as a guide, the expedition set sail from Hampton Roads the morning of August 18, 1838, on the long voyage of discovery which was to end nearly four years later after they had completely encircled the globe. Dangers there were in plenty and enough of adventure to satisfy the boldest. Many hardships were to be endured, and internal dissension added to their troubles during the long cruise. Whatever was lacking, however, their courage never failed them, and in spite of all handicaps, the expedition was successful in that they carried out their orders and accomplished what they had set out to do.

On arrival at any port, the routine of the expedition was generally the same. An astronomical station was set up, and as complete a survey as possible was accomplished; while the scientists went ashore and investigated the country's geology, botany, etc. A general description of the place was made with particular reference to the history, type of government, manners and customs of the natives, and the general subject of commerce. Castaways and shipwrecked sailors were often encountered and received on board. At times they were called on to handle cases where members of whaling ships or other vessels had been murdered by natives. If the native chiefs failed to take proper action, Wilkes usually took the matter into his own hands and meted out punishment.

On departure from Hampton Roads, the tiny squadron headed first for Madeira, passing within sight of the Azores en route. They arrived at Madeira on September 16 and spent about 10 days there collecting data. From this island they journeyed south to the Cape Verde Islands, passing near the Canaries and investigating various shoals and dangers reported to exist in these waters. None of these were found as reported, and the squadron anchored in Porto Praya Bay, Cape Verde Islands, on October 6.

Only one day's stop was made here before the departure of the expedition for Rio de Janeiro. Several shoals and islands, which had been reported, were investigated during this part of the cruise, but none of them could be located. Wilkes continued on and arrived off Rio on November 23, 1838. About a month and a half was spent in this region.

Shortly after New Year's Day, anchors were again hove up and sail set to the southward. The squadron anchored off the Rio Negro anchorage for a day or so and then continued to the southward passing through the Straits of LeMaire on February 13, 1839, rounding Cape Horn and continuing on to Orange Harbor on the

southern coast of Tierra del Fuego. This place had been selected as a rendezvous preparatory to their first antarctic voyage. Just prior to arrival at this port, they experienced the first of the many remarkable mirages which they were to encounter.

After a short stop at Good Success Bay, they anchored in Orange Harbor on January 30, 1839. In addition to their routine investigations, preparations were made for the first journey into the Antarctic. Wilkes now shifted to the *Porpoise*, leaving the *Vincennes* for the time being to continue with the surveys of the various waters of Tierra del Fuego.

The instructions were to explore to the southward of "Powell's Group" and to endeavor to reach a high southern latitude. The *Porpoise*, with the tenders, left Orange Harbor on February 25, and on March 1 their first iceberg was sighted. Continuing, they sighted several islands of the South Shetland group and eventually Palmer's Land hove in sight. The weather meanwhile had been most inhospitable. Gales, fog, and the ever increasing number of icebergs rendered the continuation of the cruise precarious. Finally, despairing of finding an opening through which they could penetrate farther south, and considering the lateness of the season and the physical condition of the crew, it was decided to return to the base at Orange Harbor. With intermittent fog enveloping them on the return northward, they had several narrow escapes from collision with icebergs, and once almost grounded on Elephant Island.

Orange Harbor was reached on March 30 and was a welcome sight. Meanwhile, the *Peacock* and *Flying-Fish* had sailed farther to the westward seeking the *ne plus ultra* of Cook. Stormy weather and bitter cold made life miserable for the crews of these two ships. The ice barrier was followed for some distance and a latitude of 70° S. was reached but the lateness of the season, a few narrow escapes from collision with icebergs, and the suffering of the crew, united to cause their leader to decide to head north. Apparently Wilkes' inexperience in polar conditions had caused him to time this part of the expedition too late in the season.

The *Relief* sailed through the Straits of Magellan but the remaining ships of the squadron left their base on April 17, 1839, and with the exception of the *Sea Gull* arrived at Valparaiso on May 15. That vessel was last sighted on April 29 off Cape Horn and was never heard of again. Two officers and a crew of 15 were lost, probably due to the vessel's foundering in a storm which occurred at that place and time.

A few weeks were spent in Valparaiso, during which time Wilkes made a trip overland to Santiago. Leaving Valparaiso, the squadron headed for Callao arriving there on June 30, and remaining about two weeks at anchor. Another trip into the interior was made by an exploring party from the expedition which penetrated the Cordilleras as far as Baños.

The expedition now left the mainland of South America and headed for the Paumoto (Tuamotu) group. This marked the first of the coral islands to be seen and there was much speculation as to what they would be like. Wilkes wrote that they had pictured them in their minds as fairy lands, but they were soon to be disillusioned. Arriving at the first of the group on August 13, an effort was made to land a party but the boat was driven off by natives armed with spears and clubs. Not wishing to force the situation, the party decided not to land. Later, parties on the different islands of the group were more successful, as the different vessels separated each with its own assigned area to survey. Friendly contacts were made with the natives but parties were ever on the lookout for treachery.

In the Tuamotu group about 6 weeks were spent, which also included a visit to Tahiti of the Society Islands. On September 27, 1839, both island groups were left behind as the squadron sailed for the Samoan Islands. Slightly over a month was spent here, all the principal islands being visited and surveyed. On November 10, 1839, the expedition headed for Port Jackson and Sydney, New Holland, or to give it its modern name, Australia, where work of fitting out for the second antarctic cruise was to be carried out. A few small islands were investigated en route.

Only about a month was utilized for the necessary preparations for the venture south into the vast unknown antarctic regions. Had they anticipated the hardships and dangers they were to encounter, it is probable that a much longer time would have been taken. These ships were never designed for cruising in the polar regions and were ill-fitted for service there. This fact, however, was not sufficient to deter Wilkes.

Two other nations, the British and French, had also planned to explore the antarctic at about this time. The French Expedition under D'Urville was in this locality at the same time as Wilkes. The British Expedition under Ross followed a year later. The south polar region was a blank on the charts of that time, although intrepid whaling ships regularly braved these cold and stormy areas in pursuit of their calling. No one knew what lay to the southward or whether there was any opening in the great ice barrier through which ships might penetrate beyond. It was for the purpose of finding the answer to this question that the three expeditions were organized.

Wilkes with his poorly equipped squadron left Port Jackson (Sydney) shortly after Christmas in 1839 after having designated Macquarie Island as a rendezvous. This island was reached about two weeks later but only served as a point for assembling his ships as they immediately pressed on to the southward. Increasing cold was now encountered, icebergs began to loom around them, and sleet and snow accompanied the storms they met as they drove steadily on. The barrier of ice next hove in sight forcing them to turn to the westward, and on January 16, 1840, in the far distance beyond the barrier, was sighted what all three ships were convinced was land looming up over the horizon. This had the appearance of an island and was so described at the time.

Following the barrier as closely as possible, Wilkes now continued to the westward hoping to find an opening through which he could proceed farther south. On January 19 land was again sighted from the *Vincennes* and later in the day from the *Peacock*—mountains looming up over the ice barrier to the southwest. This landfall was designated Cape Hudson by Wilkes. Although it was sighted from both ships, and sketches of it were published by Wilkes, this land, or at least its location, was afterwards to be the subject of a dispute which continues to this day.

Still seeking an outlet to the southward, the little ships continued beating to the westward along the ice barrier. On January 22, while investigating a small bay in the barrier ice, the *Peacock* was caught among the icebergs with the result that her rudder was crushed and considerable other damage done, as she collided with an immense ice floe. Only unusually fine seamanship and skillful handling saved the ship from entire destruction. When she was finally extricated, it was found that the damage was so great that it was considered dangerous for the ship to continue her work of exploration. Accordingly, the ship headed north, abandoning any further part in the expedition until repairs could be made.

The following day, the appearance of land was again observed by the *Vincennes* but it was still impossible to make any headway towards it on account of the barrier ice. The ships still continued to skirt the barrier to the westward, however, and on January 28 were rewarded with a sight of land directly ahead. They

approached to within half a mile of it, but the gale blowing at the time prevented lowering a boat for landing.

As the land in sight extended for a considerable distance, both to the eastward and to the westward, and considering his previous landfalls, Wilkes now for the first time concluded that he was in contact with a land of continental dimensions. "I gave the land the name of the Antarctic Continent," he wrote at this time. As the section of the coast explored by him, ranging from about 95° to 153° E. Long. constituted only a relatively small part of the Antarctic Continent itself, it has been the practice of most geographers to refer to this section as Wilkes Land. It has been suggested that the smaller sections of land, which have been explored more in detail in this area, should be known as "coasts," instead of "lands," reserving the latter designation for major divisions of the continent.

The conclusion that this was a continent with which he was in contact, did not, however, complete Wilkes' exploration in the antarctic. The blank space on the chart to the westward was still to be investigated and the ships again pushed on to develop the coast line in that direction. Stormy weather and bitter cold continued to take its toll among the crew, and the physical condition of the men was such that the medical officers wrote a letter of protest against continuing the cruise. A board of officers ordered by Wilkes to investigate this charge concurred in the recommendation of the medical officers. A less indomitable commander would probably have decided to abandon further exploration in this climate, but Wilkes was adamant and ordered the squadron to continue the cruise.

Again land was sighted on February 2, 1840, but thick weather set in and a gale, which lasted until the 7th, shut out the view and prevented any further approach towards the shore. On the latter date, the high mountains beyond the barrier were again visible and as the ships continued to the westward, still another landfall was made on February 10. Two days later land was distinctly made out which remained in sight throughout the day. For the next few days sighting of land was a daily occurrence but all attempts to find an opening through the barrier by means of which a landing or even a closer approach could be made were frustrated.

On February 17, although what appeared to be land was sighted, the direction of the trend of the barrier ice was shifted to the northward and eastward and from now on as the expedition wended its way skirting this barrier as closely as possible, no more land was sighted. On February 21, 1840, having reached the latitude of 61°-30′ S., Wilkes decided that his mission had been completed and, calling all hands aft, he announced to their great joy that they were now to head north and continue their explorations in more hospitable and temperate areas.

The Peacock, One of Wilkes's Squadron, in the Ice.

About three weeks later the squadron was again in Sydney for a badly needed overhaul preparatory to resuming their explorations anew. This overhaul was completed in about 3 weeks, and on March 19 the expedition again set sail and stood towards New Zealand, anchoring in the Bay of Islands on the 30th. A week later they were again under way heading for Tongataboo Island, one of the Tonga group. During a 2-week stay at this island, Wilkes undertook to mediate in a tribal quarrel between two factions of natives with rather negative results. The Fiji Group was next visited on May 5, and, as this group was considered of considerable importance, about 3 months were utilized in collecting data and surveying the islands.

While engaged in surveying on the island of Malolo of this group, a party from the *Vincennes* and the *Leopard* were treacherously attacked by the natives and Lieutenant Underwood and Midshipman Henry (the latter a nephew of Wilkes) were killed and an enlisted man badly wounded. Wilkes immediately decided to punish the natives for this attack. A landing party was sent ashore, which burned the two villages on the island and killed 57 of the islanders before the native chiefs finally sued for peace. As a result of this incident Wilkes, on his return to the United States, was tried by a general court-martial on the charge of murder and of acting in a cruel, merciless, and tyrannical manner, but was acquitted.

Leaving the Fijis on August 10, 1840, the squadron proceeded to investigate the Phoenix Islands. Several of this group were sighted and, while no formal surveys were made of them, parties were landed in boats to reconnoiter where possible and rough sketches were made. Canton Island, then known as Mary Balcout Island, was not visited although it is shown on the charts.

The Sandwich Islands, or Hawaiian Islands, as they are now called, were reached on September 23, 1840. Wilkes apparently was not impressed very favorably with his first view of Oahu and his comments regarding it did not fit in with the title, "Paradise of the Pacific," with which others had described these islands. His plans were now overhauled after a general estimate of the situation and considering that his remaining time was limited he decided to split up his expedition. The *Peacock* was dispatched to check up on a few "holidays" in the surveying of the Samoan group and to reconnoiter the islands of the Ellice and Kingsmill (Gilbert) groups.

In addition to these instructions, Lieutenant Hudson, the commanding officer of the *Peacock*, was directed to investigate several incidents where the natives had

attacked or murdered members of the crew of whaling ships and to punish the offenders if found necessary.

The *Porpoise* was directed to return to the Tuamotu group and Society Islands and to investigate certain other islands of these groups. The *Vincennes* meanwhile was to spend about 6 months in the Hawaiian Islands. During this time, the remainder of the larger islands of this group were explored and considerable surveying done. Expeditions were sent to examine Mauna Loa, Mauna Kea, and Kilauea. The ascent of the first two volcanoes was made during the winter and the weather encountered at the high altitudes was somewhat reminiscent of that experienced in the antarctic.

Meanwhile, the *Peacock* left Honolulu in December, 1840, and headed south passing again through the Phoenix Islands and surveying one or two of them. Again none of the ships of the expedition sighted Mary Balcout Island of this group.

The Samoan Islands were next visited and when the work there was completed, the ship headed first for the Ellice group and then for the Kingsmill group. On Drummond Island of the latter group a seaman from the *Peacock* was treacherously murdered. An expedition was later sent ashore, several of the native chiefs were shot, and the town was burned as a punishment. After visiting the Radack (Radak) Islands, the *Peacock* on May 8, 1841, turned north for Honolulu and then sailed to join Wilkes in the Columbia River territory of Western America.

The *Vincennes* had left Honolulu on April 5, 1841, and reached the mouth of the Columbia River 22 days later. Wilkes decided to proceed immediately to the Straits of Juan de Fuca and to begin his surveying in these waters. After almost being wrecked off Destruction Island he arrived in the Straits on May 1 and anchored in Port Discovery the following day.

All hands now turned to surveying, and for the next 6 months the various parts of the Straits of Juan de Fuca and Puget Sound were surveyed and mapped. All the data they could acquire were obtained from the settlers and missionaries in that region and from various posts of the Hudson Bay Company. Three extensive exploring expeditions were made inland. One under Wilkes landed at Nisqually (near present site of Tacoma), struck downward to Fort Vancouver just north of present site of Portland, followed the Columbia River and the Willamette Valley to the Falls. A second expedition from Nisqually crossed the Cascade Range north of Mt. Rainier, continued onward to the Columbia, crossing it and later penetrating to Fort Colville almost at the northeastern corner of Washington State. Returning they penetrated into Idaho reaching Lake Coeur d'Alene, turned south following the Snake River to Fort Walla Walla, thence journeying back to Nisqually. This expedition devoted some study to the Grand Coulee which it passed en route. A third expedition followed the Columbia River up to its junction with the Walla Walla River.

The work of surveying Puget Sound had been going on at a rapid pace, and on June 16 the ships moved out into the Straits of Juan de Fuca and continued surveying there. On June 27, Wilkes received the news that the *Peacock* had been wrecked off Cape Disappointment but that all hands had been saved. Surveying was now discontinued and as soon as the ships could be assembled, the expedition got under way on August 2, 1841, arriving off Astoria on the 6th.

Wilkes now shifted his command to the *Porpoise*, dispatched the *Vincennes* to San Francisco, and proceeded to make a survey of the Columbia River. The *Porpoise* proceeded up the Columbia to Fort Vancouver, after once running aground, and while there was joined by the party which had been surveying Gray's Harbor. The survey of this river to the head of navigation went on apace. Meanwhile, an expedition was ordered now to explore overland from Fort Vancouver to San Francisco, joining the *Vincennes* there. This party left early in September. The surveys of the Columbia and Willamette were completed on October 6 and the *Vincennes* proceeded to San Francisco, anchoring off Sausalito. A surveying expedition was shortly dispatched up the Sacramento River. They reported reaching the residence of Captain "Suter," who held an appointment as governor of this district but who claimed "supreme power" over it. From him they obtained much information of value as they continued the ascent of the Sacramento up to beyond the present site of Sacramento City. Surveys were also made of the northern section of San Francisco Bay and San Pablo Bay but very little of the southern section, although a small party from the ships visited the mission at Santa Clara.

Wilkes would find little honor as a prophet in Southern California today. "The country between it (upper California) and Mexico can never be anything but a barren waste," he wrote in his narrative at the time.

Meanwhile, the overland party which left Fort Vancouver was slowly wending its way to San Francisco. They were beset with sickness and hostile Indians as they made their way past "Shaste Peak" and the "Klamet Country" to the valley of the Sacramento, but fortunately had no casualties. This party finally reached Captain "Suters" at New Helvetia from whence they journeyed down the river to join the *Vincennes* on October 24, 1841, after almost two months absence.

While at Sausalito the brig *Oregon* was acquired and added to the squadron, to replace the *Peacock*. On November 1 the squadron departed from San Francisco Bay and arrived off Honolulu on the 17th. The stop of 10 days at this port was only for the purpose of obtaining necessary supplies. On November 28 the expedition again sailed onward.

Wilkes had originally planned to stop at Japan, but the delay incident to the stranding of the *Peacock* caused him to change his plans and omit that country from his itinerary. His orders were to arrive in New York by May 31, 1842, and this left him little time. On leaving Honolulu, the squadron again split up. The *Porpoise* and *Oregon* explored the small islands and reefs of the Hawaiian group to the westward, then rounded northern Luzon and proceeded direct to Singapore.

Wilkes with the *Vincennes* and *Flying-Fish* headed southeastward, investigating various islands reported to exist in those waters but was unable to find any trace of them until he arrived at Wake Island which was reached on December 20, 1841. Boats were sent to make a quick survey which was completed that same day. Continuing they sighted Grigan, the northernmost inhabited island of the Ladrone group, and discovered Assumption Island although they did not stop there. From that island they rounded the northern end of Luzon and anchored in Manila Bay on January 12, 1842. The *Flying-Fish* separated en route passing through the southern part of the Radack group. Skirting to the northward of the Carolines she passed through San Bernardino Channel and arrived at Manila the same day as the *Vincennes*.

The short time remaining was now an important factor and prevented any considerable period being spent at any one place. The two ships therefore left Manila after a stay of only 9 days and proceeded south into the Sulu Sea making a few stops en route, various surveying jobs being meanwhile assigned to the tender. The charts of this region were found worthless and the pilots were little better. On February 2, the ships anchored off the Island of Sulu and Wilkes immediately entered into negotiations for a treaty with

the Sultan governing commerce between Sulu and the United States. This was drawn up and signed and shortly thereafter Wilkes got under way for Singapore.

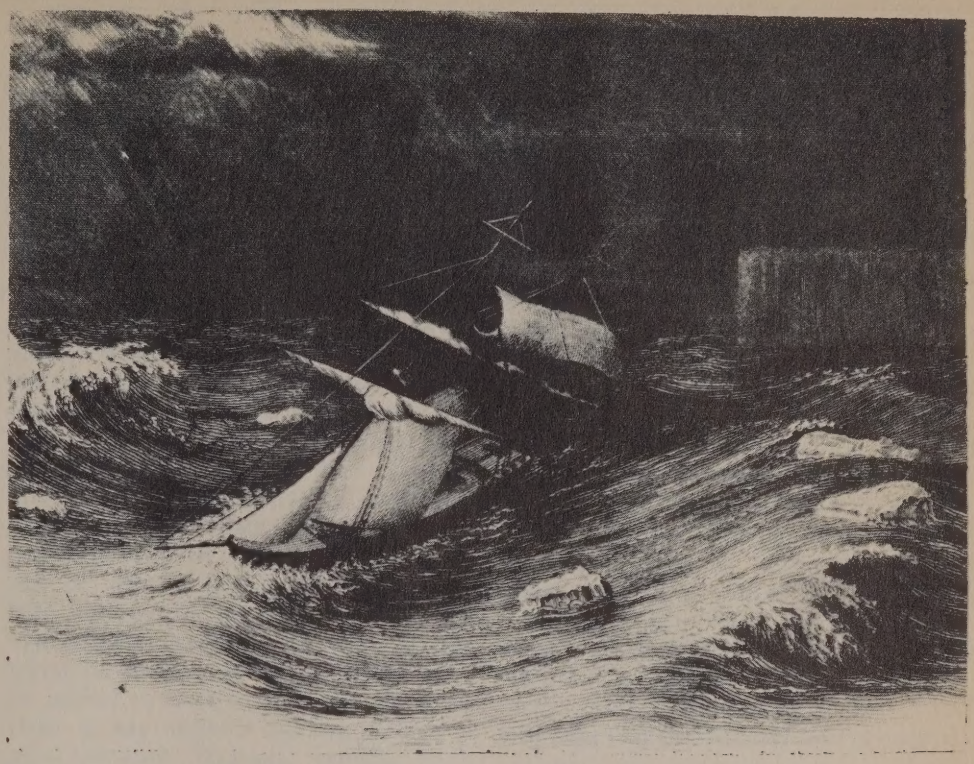
On arrival there on February 18, he found the remainder of his squadron awaiting him. An examination of the *Flying-Fish* resulted in her being found unseaworthy and she was accordingly sold. Only a week was available for the stop at Singapore and then the expedition sailed for Capetown. On April 13, 1842, the tiny squadron anchored in that port. Little time remained, however, and only 4 days were spent here before the ships were again under way, this time really homeward bound, as only one more stop was to be made before they reached the United States.

St. Helena was the place selected for this stop and the expedition anchored there on May 1, 1842. At this time the island appears to have been a popular anchorage for United States ships. Mention was made that 6 American ships were anchored there on their arrival and 3 more came in the following day. A visit was made by Wilkes to "Longwood," the recent prison residence of Napoleon, whose memory was then still fresh among the inhabitants.

The closing "leg" of the cruise was uneventful. On June 10, 1842, the expedition dropped anchor off Staten Island thus writing the closing chapter of one of the greatest epics of the sea. All hands were now called aft and Wilkes expressed his thanks to them all for the manner in which they had conducted themselves. A national salute was fired, and Wilkes' pennant was hauled down as he left the ship for the last time.

During the course of the expedition, hydrographic surveys were made of some 280 islands as well as of the inland waters of what is now United States territory extending from the Straits of Juan de Fuca to San Francisco Bay. The existence of the Antarctic Continent had been added to the world's knowledge of geography and 1,600 miles of its coast had been followed to substantiate the claim.

Charts to the number of 180 were constructed by Wilkes as a result of the expedition. In addition to the narrative of the expedition which consisted of 5 large volumes, some 14 volumes were published covering the researches in geology, botany, ethnology, meteorology, hydrography, etc., and 5 volumes for some reason were not published although they were listed in the series. A number of atlases were published and the proved nonexistence of many islands affected other charts to a large extent. Many botanical species were brought back and about 2,000 sketches made during the exploration.



The Porpoise Making Heavy Weather in a Gale.

Illustrations Courtesy of the Explorers Club.

In spite of the fact that the results obtained by the expedition branded it as an outstanding achievement for the country's first venture in this field, the reception accorded Wilkes on his return was far from that usually given returning heroes in this country. The reason for this was soon apparent. Always a martinet, he had on numerous occasions incurred the animosity of some of his officers, and while this enmity only smoldered during the progress of the cruise, it now broke into the open.

Wilkes was assailed on the floor of Congress and charges were preferred against him by some of his officers which resulted in his being brought to trial before a general court-martial. These charges ranged from disrespect to his superior officer and cruel and inhuman treatment of his men, to murder, the latter charge based on the incident where the slaughter by cannibals of two of his officers on Malolo Island was avenged by an armed landing party. He was acquitted by the court on all the charges.

During the progress of the trial, however, one officer carried his animosity toward Wilkes to the extent of testifying that he had falsely reported sighting land in the antarctic on January 19, 1840. Although this testimony was refuted by the testimony of two officers and several of the crew, nevertheless an officer of the expedition had been found who had cast doubt on the authenticity of Wilkes' discoveries, and this incident was to be used later in attempts to discredit him.

This incident was not the only one to be used against him, however. For some reason or other—possibly professional jealousy or overzealous patriotism—Wilkes was shortly afterwards subjected to considerable criticism by some of his contemporaries. How unjust and unfair this criticism was is readily seen when the facts are examined.

On a tracing of his preliminary chart which Wilkes sent to Ross as a generous courtesy to this rival, there was shown a patch of land in the general vicinity of the Balleny Islands but somewhat to the eastward. This was intended to represent the general area of this land as taken from Balleny's own report. Not only was this not a part of the Antarctic Continent but actually Wilkes never mentioned sighting it. On the chart shortly afterwards published by Wilkes, this land was not shown at all. Ross had a copy of the published chart in his possession in 1841 when he sailed through this spot and found no land. Nevertheless, this did not deter him from asserting that he had sailed through Wilkes Land and thereby proved that it did not exist.

Actually Ross explored a different section of the Antarctic Continent, and never passed near any of the land reported by Wilkes. However, this statement and others regarding the Antarctic Continent were taken up by some geographers and enlarged upon until it became almost a tradition that Wilkes had been thus discredited and his other reported landfalls, not having been confirmed by any other explorer, probably also did not exist. As no other expedition subsequently explored this section of the continent for almost 75 years, this assumed doubt gradually became a conviction.

Early in the present century some of Wilkes' landfalls shown on the eastern part of his chart (around Cape Hudson) were shown to be some distance to the northward of any known land, and the same is true of Cape Carr and Termination Land. However, these discrepancies may be satisfactorily explained.

On the chart prepared by Wilkes of this region, he laid out the tracks of his vessels, the general contour of the ice barrier, and the approximate positions where he had sighted land at different times. At no time was he able to actually set foot on land and most of the high land was sighted by him from a distance. These distances could not be accurately measured, and so it naturally follows that the positions shown for these lands are only rough estimates at best. Further, it is well known by students of polar exploration that the weather in the antarctic is very conducive to mirages and that due to this condition, on clear days land may sometimes be sighted looming over the horizon at extreme distances even up to as much as 150 miles. As mountainous land exists in the general direction as seen by Wilkes but much farther away than shown, it is possible that unusual visibility in connection with a mirage might have accounted for the large errors in distance. This theory is very plausibly expounded by Professor W. H. Hobbs ("Wilkes Land Rediscovered," Professor W. H. Hobbs, in *Geographical Review*, October, 1932), who cites several examples where even the most severe of Wilkes' critics were themselves proved to be the victims of large errors in estimating positions of land seen in the antarctic distance. This author cites the log of the *Aurora* (Shackelton's Expedition in 1915) which mentions sighting "Cape Hudson" clearly from near where Wilkes saw it, though in clear weather the following day it could not be seen.

It is, of course, possible that some of the land reported by Wilkes may have been only a mistaken view of a ridge of the barrier ice, as claimed by some of his critics. When landfall after landfall was reported, however, as he sailed farther to the westward and this land was visible clearly enough to be sketched, there seems to have been no logical reason for assuming that *all* his reports of land were erroneous and therefore the Antarctic Continent did not exist.

However, for about three-quarters of a century, many geographers did choose to ignore "Wilkes Land" and it remained for the two expeditions of Mawson in 1911–14 and 1930–31 to prove that, with the questionable exceptions of the eastern and western limits, land did exist for the greater part of the continental coast line explored by Wilkes and in the approximate positions assigned it by him. It should also be mentioned that the positions of land reported by Mawson are also only approximate except as to those points where he actually landed, and they may be subject to error to the same extent as those of any explorer sighting land at a great distance. Strangely enough, however, although Mawson's expeditions were the means of confirming the discoveries of Wilkes regarding Norths High Land, Tottens High Land, Budds High Land, and Knox High Land, that explorer claims the credit for his own expedition as being the first to sight them, although he admits that Wilkes *believed* he had discovered them.

No claim was ever advanced by Wilkes that he was the first to *sight* the Antarctic Continent. This had been done previously at one point or another by others, but none of these were aware at the time or claimed that the single stretch of land sighted by them was part of a huge continent that could only be established by developing the presence of a continuous coast line of considerable extent. This was actually accomplished, however, by Wilkes, and on this basis he did claim that a huge antarctic continent existed there and gave the approximate location of the coast line for about 1,500 miles. Now that this claim of Wilkes has been verified, surely there is no longer justification for denying him the credit for discovering the existence of the Antarctic Continent. On the other hand, belated justice demands that the name of "Wilkes Land" be restored to the entire stretch of the coast discovered by Wilkes and that lesser subdivisions be designated as "coasts"; as for instance, "Adelie Coast" instead of "Adelie Land."

Following his return and subsequent court-martial, Wilkes was ordered to duty with the Coast Survey and was promoted to the grade of commander in 1843. The following year he was assigned the duty of preparing for publication the material collected by the expedition. This duty continued until the outbreak of the Civil War. Meanwhile, having been promoted to the rank of captain, he was assigned to command the *San Jacinto* and during the war was prominent in the Trent Affair as mentioned previously. He was promoted to the grade of commodore in 1862 and retired for age in 1864. Two years later he was given the rank of rear admiral on the retired list. His death, which occurred about 10 years later, closed the career of a naval officer whose exploits constitute a glorious page in the history of this nation.

THE CRUISE OF *Wilkes will remain among the remarkable achievements of all time. No such achievement has been accomplished in the annals of the Arctic or Antarctic. With unsuitable and improperly equipped ships, amid gales, snowstorms, and fog, Wilkes followed an unknown coast line exceeding in length the Ural mountain range, which makes the result of his cruise so important, for he did not merely sight the coast line, but he hugged it for such a distance as to make sure that it was continental in dimensions. It is only the exact truth to assert that the discovery of the existence of the Antarctic Continent belongs to Charles Wilkes.*—EDWIN S. BALCH.

CAPTAIN G. S. BRYAN, U.S.N., has contributed an article of interest not only to naval officers but to all Americans. Neither Wilkes's discoveries nor his tenacity and courage have previously received just dues from most historians. Concerning his interest in Wilkes, Captain Bryan writes:

I graduated from the Naval Academy in 1906, and have had about the usual seagoing experience of an officer. On my present shore duty I was Assistant Hydrographer for a little over a year and I am now Hydrographer of the Navy. In this position I naturally was impressed with the importance of the work done by Wilkes on his exploring expedition and the centennial of the occasion seemed to be a fitting time to revive the story of the expedition.

U. S. Naval Institute Proceedings

OCTOBER 1939